# Canada Energy Regulator Reasons for Decision

South Bow GP (Canada) Ltd.
RH-005-2023

Canada

# Canada Energy Regulator
# Reasons for Decision

In the Matter of

**South Bow GP (Canada) Ltd.**

Compliance Filing and related requests regarding Phase 1 Toll Order TO-005-2022

RH-005-2023
March 2025

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**Glossary of terms and abbreviations**

| | |
|---|---|
| CER | Canada Energy Regulator |
| CER Act | Canadian Energy Regulator Act, SC 2019, c 28, s 10 |
| Cenovus | Cenovus Energy Inc. |
| Commission | The Commission of the Canada Energy Regulator established pursuant to the CER Act. |
| Compliance Filling | The South Bow GP (Canada) Ltd. Compliance filling dated 14 April 2023 for the Condition 1 Toll Order TO-005-2022. |
| Cushing Expansion | The South Bow project approved in the OH-1-2008 Reasons for Decision that increased the nominal capacity of the Keystone System by the installation of additional pumping facilities and changes to the facilities approved in the OH-1-2007 proceeding and Certificate OC-51. |
| Phase 1 Decision | The Commission's 14 December 2022 decision for Phase 1 of the RH-005-2020 proceeding. |
| DRA | Drag reducing agent |
| Flow rate | Actual volume of liquid transported at a point in time, typically measured in cubic metres per hour ($m^3$/hr) |
| HF Sinclair | HF Sinclair Refining & Marketing LLC |
| IR | Information request |
| Keystone System | A pipeline system that provides transportation of crude oil within Canada from Hardisty, Alberta to the international boundary near Haskett, Manitoba for ultimate delivery to the United States at: Wood River and Patoka, Illinois; Cushing, Oklahoma; Port Arthur and Houston, Texas. |
| MADP | Maximum Allowable Discharge Pressure |
| MURs | Make-up Rights |
| NEB | National Energy Board, predecessor to the CER |
| OM&A | Operating, maintenance and administration |
| Phase 1 Order | Toll Order TO-005-2022 |

| | |
|---|---|
| Original TSAs | The Canadian Patoka Transportation Service Agreement and the Canadian Cushing Transportation Service Agreement. |
| Phillips | Phillips 66 Canada Ltd. |
| Review Application | The review and variance application filed by South Bow in respect of the Commission's Phase 1 decision of the RH-005-2020 proceeding. |
| SCADA | Supervisory Control and Data Acquisition |
| SOF | System Operating Factor |
| South Bow | South Bow GP (Canada) Ltd., formerly TransCanada Keystone Pipeline GP Ltd. |
| Throughput | Actual volume of liquid moved during a specific time period. |
| TSA | Transportation Service Agreement |
| Variable Toll | The variable portion of South Bow's tolls that flows through operating, maintenance and administration costs and expenses. |

**Symbols and Units**

| | |
|---|---|
| $ | dollars (CAD) |
| % | per cent |
| bpd | barrels per day |

**Recital and appearances**

**IN THE MATTER OF** the *Canadian Energy Regulator Act* and the regulations made thereunder;

**AND IN THE MATTER OF** complaints regarding South Bow GP (Canada) Ltd., as the general partner on behalf of South Bow (Canada) Limited Partnership, Canada Energy Regulator Tariff Nos. 44 and 50 (Phase 1) and Tariff No. 54 (Phase 2) in respect of section 230 of the *Canadian Energy Regulator Act* under File 3436526;

**AND IN THE MATTER OF** a compliance filing filed by South Bow GP (Canada) Ltd., as the general partner on behalf of South Bow (Canada) Limited Partnership, in accordance with Canada Energy Regulator Amended Toll Order AO-002-TO-005-2022;

**AND IN THE MATTER OF** a proceeding established on 1 September 2023 by the Commission of the Canada Energy Regulator to consider the compliance filing filed by South Bow GP (Canada) Ltd.;

**HEARD** in Calgary, Alberta on 4-7 November 2024 and 2-3 December 2024.

**BEFORE:**

Trena Grimoldby     Presiding Commissioner
Stephania Luciuk     Commissioner
Mélanie Chartier     Commissioner

| **Participants** | **Appearances** | **Witnesses** |
|---|---|---|
| South Bow GP (Canada) Ltd. | Sander Duncanson<br>Corinne Tansowny | Michael Prins<br>Leo Amorim<br>Alex Melvin<br>Dr. Hamid Bidmus<br>John Reed<br>Reuben Moreno |
| Phillips 66 Canada Ltd. &<br>Cenovus Energy Inc. | Alastair MacKinnon<br>Keith Bergner | Dr. Dan Arthur<br>Todd Janzen<br>Ryan Tholanikunnel |
| HF Sinclair Refining & Marketing LLC | Alan Ross<br>Bradon Willms | |
| Canada Energy Regulator | Asad Chaudhary<br>Michelle Haug | |

# 1    Compliance Filing and disposition

On 14 December 2022, the Commission of the Canada Energy Regulator issued the RH-005-2020 Reasons for Decision (**Phase 1 Decision**). The Phase 1 Decision addressed the toll complaints filed by Phillips 66 Canada Ltd. (**Phillips**) and Cenovus Energy Inc. (**Cenovus**) regarding 2020 and 2021 tolls on the Keystone Canada Pipeline System (**Keystone System**). As part of that decision, the Commission directed South Bow GP (Canada) Ltd. (**South Bow**) to refile its 2020 and 2021 tolls to remove certain costs and include, absent unanimous shipper support, its proposed methodology for allocating drag reducing agent (**DRA**)[1] expense to different categories of use.

On 14 April 2023, South Bow submitted the filing as ordered (**Compliance Filing**). South Bow's Compliance Filing included a proposed expense allocation methodology for DRA used in the Keystone System, and final tolls for 2020 and 2021. Phillips and Cenovus together, as well as Imperial Oil Limited, filed letters requesting that the Commission establish a process to consider South Bow's Compliance Filing. The Commission established a proceeding that concluded on 3 December 2024.

For the reasons discussed in this decision, the Commission finds that South Bow's proposed DRA allocation methodology, with a modification to remove Step 3 involving the DRA used to transport additional Make Up Rights (**MUR**) volumes, will result in just and reasonable tolls for 2020 and 2021.

In its Phase 1 Decision, the Commission interpreted the terms of the Patoka and the Cushing Transportation Service Agreements (collectively, the **Original TSAs**) applicable to the Canadian portions of the Keystone System. The Commission assessed whether those agreements allowed South Bow to recover DRA expenses in the variable toll, which flows through operating, maintenance and administration (**OM&A**) costs and expenses to shippers (**Variable Toll**). That contract interpretation was necessary because the Original TSAs do not specifically contemplate the use of DRA or the allocation of related costs for the various uses for DRA, since DRA for heavy crude oil application was not commercially available when the Original TSAs were executed between 2005 and 2009. South Bow began using DRA on the Keystone System for heavy crude oil in 2014.

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[1]    DRAs are chemicals that can be injected into a pipeline's product stream and can be used to increase the volumes of oil transported on a pipeline system.

In the Original TSAs, expansion costs were not recoverable through the Variable Toll. The Commission determined that some DRA was used to expand the nominal capacity[2] of the Keystone System and concluded that the DRA costs incurred for expansion were not recoverable in the Variable Toll. At the same time, the Commission found that other operational DRA costs could be recovered through the Variable Toll, specifically where DRA had been used to mitigate the temporary capacity impacts of pressure restrictions, maintenance activities, and unplanned outages.

In this proceeding, South Bow proposed a methodology to allocate DRA costs that identifies pressure restrictions, planned maintenance and outage events based on real-time operating data and automated thresholds. When such temporary events occur, South Bow's methodology uses statistical curves to estimate how much DRA would be needed to achieve the hourly flow rates, absent the temporary event. During temporary events, the DRA that the statistical model estimates would normally be used to achieve the hourly flow rate is allocated to South Bow, while the incremental DRA used to respond to the event is allocated to the Variable Toll. When there are no operational events, all DRA is allocated to South Bow's account. Further, because DRA's effectiveness diminishes as more DRA is injected into the system, South Bow's proposal also includes an adjustment that assumes the lowest-cost, most effective DRA is used first to mitigate temporary events. This adjustment results in a shift of additional DRA costs to South Bow's account.

Phillips and Cenovus were of the view that the methodology proposed by South Bow did not comply with the Phase 1 Decision and jointly proposed a different methodology that uses hydraulic modelling to allocate DRA expenses. This alternative methodology uses South Bow's own hydraulic model to calculate, each month, how much DRA would have been needed to maintain the non-DRA nominal capacity of the Keystone System, argued to be 535,000 barrels per day (**bpd**). The cost of any DRA used to maintain the 535,000 bpd nominal capacity is included in the Variable Toll. Any DRA used to push the system above that capacity level is treated as expansion DRA and allocated to South Bow. Over the course of a month, this methodology accounts for the cumulative impact of temporary operating events on South Bow's ability to achieve the Keystone System's non-DRA nominal capacity for a given pipeline segment.

The dynamic nature of DRA usage[3] requires approximations and assumptions to be made in any practical methodology. As a result, no proposed methodology would likely be able to perfectly allocate the cost of each DRA molecule used. Given this context, the Commission assessed which methodology would more closely allocate costs in a manner consistent with the Phase 1 Decision and the Original TSAs.

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[2]  Nominal capacity being the long-term sustainable capacity that the system can achieve.

[3]  For example, DRA injections are based on achieving a flow rate each hour that is affected by operating variables that are constantly changing at each pipeline segment.

The Commission's examination in the current proceeding required the Commission to refine and consider its Phase 1 Decision regarding the recoverability of DRA costs in the Variable Toll within the context of the parties' intentions in the Original TSAs, and with the benefit of a much more detailed record regarding DRA uses. As set out in Chapter 4, the Commission finds that South Bow's proposal better aligns with the Original TSAs and the Phase 1 Decision. South Bow's methodology allows for allocations between both DRA categories during temporary events,[4] even during periods when the system is capable of achieving its non-DRA nominal capacity without DRA, which is discussed in Section 4.4.1. This appropriately reflects that the Keystone System has been expanded above the 535,000 bpd non-DRA nominal capacity through sustained DRA use, with those costs allocated to South Bow, and also allocates the DRA costs to operate and maintain the DRA-expanded capacity to the Variable Toll. In contrast, the 535,000 bpd non-DRA nominal capacity threshold used in Phillips and Cenovus' proposal fails to reflect the costs to operate and maintain the DRA-expanded capacity, and it would inappropriately exclude such DRA costs from the Variable Toll.

Phillips and Cenovus were of the view that short-term temporary uses of DRA that reduce system downtime, over the course of a month, can result in an expansion of nominal capacity. This could present an inconsistency in the two broad categories of DRA use defined in the Phase 1 Decision, which provided broad findings on the Original TSAs and the treatment of DRA costs. As addressed in Section 4.6.1, in general, the Commission finds that DRA used to mitigate short-term temporary events, over the course of a month, does not immediately result in the expansion of the long-term and sustainable capacity that the Keystone System can achieve (i.e., the nominal capacity). While South Bow may outperform its nominal capacity in any given month, whether due to mitigating operational events with DRA, experiencing less outages or maintenance activities than assumed for in the System Operating Factor (**SOF**),[5] or through other measures within South Bow's reliability program, the Commission does not consider capacity gains in an individual month to be an expansion of the system's long-term sustainable capacity. However, the Commission acknowledges that if such gains are sustained over time, they may indeed contribute to an expansion of the system's long-term sustainable capacity. Moving forward, the Commission requires South Bow to provide information as outlined in Section 4.11.1 to allow parties to monitor and gauge whether an expansion of nominal capacity owing to an increased use of DRA and effective long-term increase in the SOF is occurring. This information includes the monthly estimated SOF targets used to determine available capacity and the actual realized monthly SOFs.

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[4] Which reflects that DRA is being used simultaneously for both expansion purposes and to mitigate the impact of temporary events.

[5] The System Operating Factor, or SOF, is a measurement of system uptime (e.g., 0.9), applied to maximum achievable flow rate. A long-term SOF value is used in determining the system's nominal capacity.
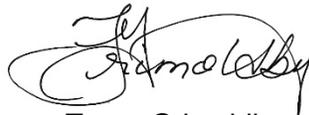
In reaching its conclusion that the South Bow methodology, as modified, for calculating 2020 and 2021 tolls yields just and reasonable tolls, the Commission gave significant weight to a number of factors that, together, demonstrate that South Bow's proposed methodology more accurately aligns with the Phase 1 Decision and the terms of the Original TSAs:

- While a hydraulic model could be a viable tool to use in allocating DRA costs, the significant variation in allocations between Mr. Janzen and Mr. Vanderpool's proposals raises concerns regarding the selection of appropriate assumptions, and the hydraulic model appears likely to significantly increase the regulatory and administrative effort needed to achieve accurate allocations (see Section 4.3).

- South Bow's proposed segment-by-segment approach allows more precise identification and allocation of DRA costs to the two categories of DRA use (See Section 4.5).

- South Bow's proposed hourly approach to calculations closely matches South Bow's operations and the choices it makes regarding DRA injections (see Section 4.6).

- The Pump Station DRA Curves used in South Bow's proposed methodology, while complex, are appropriate (see Section 4.7).

- South Bow's approach to identify pressure restrictions, planned maintenance, and unplanned outages strikes an acceptable balance between accuracy, objectiveness and administrative effort (see Section 4.8).

- The administrative effort associated with South Bow's proposed methodology is reasonable for South Bow to carry out, through automation of the process (see Section 4.11).

While the Commission considered the South Bow methodology appropriate for the calculation of 2020 and 2021 tolls, as discussed in Section 4.9.1 the DRA expense associated with accommodating additional MUR volumes above 6 per cent of nominal capacity is not appropriate to include in the Variable Toll. This DRA is used for the clear purpose of allowing incremental volumes to be transported on the system and not to mitigate temporary operational events or improve reliability. The Commission does not consider this specific use of DRA to be an OM&A cost recoverable in the Variable Toll pursuant to the Original TSAs and therefore directs South Bow to remove this step from its methodology and then recalculate and refile 2020 and 2021 tolls. The Commission will decide on South Bow's other requests regarding go-forward interim tolls and carrying charges upon South Bow's subsequent application for final 2020 and 2021 tolls, but provides findings in Section 5.1 on those matters.

The record before the Commission regarding 2020 and 2021 tolls was extensive and the Commission has endeavoured to provide detailed analysis of the allocation methodologies proposed in this proceeding. The Commission notes that the South Bow methodology, as modified, may continue to be suitable for the calculation of the Variable Toll on a go-forward basis, including for subsequent toll years to be addressed in Phase 2. However, the scope of the current proceeding arose from complaints regarding 2020 and 2021 tolls and the Commission acknowledges that other operational events or circumstances, as well as emerging data could affect the appropriateness of Variable Toll calculations. As such, the Commission has not pre-determined the appropriateness of the DRA allocation methodology beyond 2020

and 2021. To the extent the South Bow methodology is used for years after 2021, South Bow has committed to provide significant information to shippers to provide transparency behind its methodology and calculations. Additional information must be provided as outlined in Section 4.11.1.

Trena Grimoldby,
Presiding Commissioner

Stephania Luciuk,
Commissioner

Melanie Chartier,
Commissioner

Calgary, Alberta
March 2025

# 2    Background

On 14 December 2022, the Commission issued its Phase 1 Decision.[6] The Phase 1 Decision considered complaints from Phillips and Cenovus regarding certain costs that South Bow included in its Variable Tolls, notably DRA expenses and, generally, any capital costs.

In its Phase 1 Decision, the Commission determined, among other things, that certain DRA expenses and the upgraded pressure control valves capital program were not recoverable in the Variable Toll. Toll Order TO-005-2022 (**Phase 1 Order**)[7] directed South Bow to recalculate and refile 2020 and 2021 tolls to remove those costs. Because the Phase 1 Decision required that certain DRA expenses be removed from tolls, depending on how DRA was used, a methodology was needed to allocate DRA expenses to different categories of use. South Bow filed a methodology in the Phase 1 proceeding, but stated that it was empirically incorrect, relied on a number of assumptions, and would be administratively complex. Given these qualifications and that the methodology was not well tested by parties in the proceeding, the Commission did not make findings on any DRA allocation methodology at that time. The Phase 1 Order required that, should South Bow be unable to achieve unanimous support from its shippers for its proposed DRA expense allocation methodology, South Bow must file a detailed methodology with the CER that clearly demonstrates how DRA expense amounts were specifically allocated to different uses.

On 23 January 2023, South Bow filed an application seeking a review and variance pursuant to section 69 of the *Canadian Energy Regulator Act* (**CER Act**) in respect of the Phase 1 Decision (**Review Application**).[8] South Bow asserted that the Commission made errors of law, that if corrected, would result in retaining DRA costs and pressure control valves program costs in the Variable Toll. Phillips, Cenovus, Imperial Oil Limited and HF Sinclair Refining Marketing LLC (**HF Sinclair**) provided comments opposing the Review Application. On 26 July 2023, the Commission issued a letter decision[9] dismissing the Review Application as it found that South Bow had not on a *prima facie* basis raised a doubt as to the correctness of the Phase 1 Decision.

On 14 April 2023, South Bow filed the Compliance Filing, which included a proposed DRA allocation methodology. In response, Phillips and Cenovus jointly requested that the Commission establish a process to consider the Compliance Filing.[10] In their view, South Bow's proposed DRA allocation methodology failed to comply with the Commission's direction in the

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[6]   CER, Reasons for Decision RH-005-2020 and Order TO-005-2022, Filing ID C22525 (14 December 2022).

[7]   South Bow, Order TO-005-2022 Compliance Filing, Filing ID C24055 (14 April 2023)

[8]   South Bow, Review and Variance Application of TransCanada Keystone Pipeline GP LTD, Filing ID C22940 (23 January 2023).

[9]   CER, Letter Decision, Review and Variance Application concerning the RH-005-2020 Decision, Filing ID C25670 (26 July 2023).

[10]  Phillips & Cenovus, Request for Process related to Keystone's Compliance Filing, Filing ID C24244-1 (28 April 2023).

Phase 1 Decision. Imperial Oil Limited also requested the Commission establish a process to provide a full and fair opportunity to test and respond to the Compliance Filing.[11]

On 1 September 2023, the Commission established a proceeding to consider South Bow's Compliance Filing.[12] The Commission granted participant status to all participants of Phase 1 of the RH-005-2020 hearing. The Commission's process included opportunities for information requests (**IRs**), written evidence and reply evidence. The Commission heard oral cross-examination from 4 to 7 November 2024. South Bow filed its written final argument on 20 November 2024 and Intervenors filed their written arguments on 29 November 2024. The Commission heard oral final argument from 2 to 3 December 2024.

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[11]  Imperial Oil Limited, Request for Process related to Keystone's Compliance Filing, Filing ID C24358-1 (2 May 2023).

[12]  CER, Procedural Update No. 1, Filing ID C26046-1 (1 September 2023).

# 3 Legal framework

**Legislation**

The traffic, tolls and tariffs provisions in Part 3 of the CER Act grant the Commission broad authority to make orders with respect to all matters relating to traffic, tolls and tariffs.

Tolls must be just and reasonable and not unjustly discriminatory. Sections 230 and 235 of the CER Act provide:

> **230** All tolls must be just and reasonable, and must always, under substantially similar circumstances and conditions with respect to all traffic of the same description carried over the same route, be charged equally to all persons at the same rate.

> **235** A company must not make any unjust discrimination in tolls, service or facilities against any person or locality.

South Bow bears the burden to establish, on the balance of probabilities, that its proposed tolls are just and reasonable. In previous decisions,[13] the National Energy Board (**NEB**) and Commission have articulated tolling principles that assist in the interpretation and application of statutory provisions in respect of traffic, tolls and tariff matters. These fundamental tolling principles include the cost-based/user-pay,[14] economic efficiency, and no acquired rights principles.

South Bow's operation of its oil pipeline system is also subject to subsection 239(1) of the CER Act, which is often referred to as the common carrier or common carriage obligation. To meet its common carrier obligations, South Bow reserves 35,000 bpd (approximately 6 per cent) of capacity for uncommitted volumes.

**The Original TSAs**

South Bow provides service to its shippers pursuant to a tolling methodology that was approved by the NEB in the OH-1-2007 and OH-1-2008 proceedings, and that is described in detail in the applicable Original TSAs. Both the Canadian Patoka TSA[15] and the Canadian Cushing TSA[16] were filed on the Phase 1 hearing record. These TSAs are referred to collectively as the "Original TSAs".

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[13]  A summary is found in the NEB, Reasons for Decision – TCPL – Gros Cacouna Receipt Point application, RH-1-2007, Filing ID A16008-1 (July 2007) at 22 (pdf 34); and CER, Reasons for Decision – NGTL – FT-L (NM) Service, RH-001-2021, Filing ID C18261-1 (March 2022) at 10 (pdf 19).

[14]  Also referred to as the cost causation principle.

[15]  TransCanada Keystone, Evidence - Pro-forma Canadian Patoka TSA, Filing ID C11126-1 (22 January 2021) at PDF 85-107 of 135.

[16]  Phillips Canada and Cenvous, Written Evidence of Dr. Arthur - Attachment 7, Canadian Cushing TSA, Filing ID C18422-4 (4 April 2022) at PDF 69-91 of 149.

South Bow charges tolls for two types of transportation services: committed and uncommitted. Committed shippers are required to pay the committed toll pursuant to the Original TSAs. The committed toll is not based on a traditional cost of service methodology. Instead, South Bow and its shippers negotiated a tolling methodology that shares risks through two toll components: the Fixed Toll and the Variable Toll.

Shippers pay the Fixed Toll component of the committed toll on a take-or-pay basis. It is levelized during the term of the Original TSAs and was subject to capital variance adjustments once the final original Keystone and Cushing Expansion project costs were determined. The Variable Toll component of the committed toll is designed to recover all OM&A costs and expenses. In the Phase 1 Decision, the Commission interpreted the terms of the Original TSAs to determine whether they allow South Bow to recover DRA costs in the Variable Toll.

**The RH-005-2020 Decision (Phase 1 Decision)**

The Commission found that 2020 and 2021 tolls properly calculated in accordance with the Original TSAs will yield just and reasonable results. Committed shippers and South Bow agreed on an allocation of risks defined in the separation of the Fixed Toll and Variable Toll components, and the NEB approved that methodology. While it found that the evidence did not demonstrate that a departure from the Original TSAs was warranted, the Commission determined that South Bow had not calculated Variable Tolls in accordance with the parties' intended allocation of risks.

In the Phase 1 Decision, the Commission was persuaded that DRA chemical could be used to effect an expansion. The Phase 1 Decision established that expenses of DRA commodity used to increase nominal capacity are not appropriately classified as OM&A costs for the purposes of the Original TSAs, and therefore not recoverable in the Variable Toll. The Commission found that:

- The relevant TSAs do not allow all DRA commodity expense to be recovered in the Variable Toll where DRA has been used to increase nominal capacity to the approximately 590,000 bpd of nominal capacity that was anticipated from the Cushing Expansion.

- Rather, the costs required to provide the approximately 590,000 bpd of nominal capacity, whether through facilities or the injection of DRA commodity, fall within the construct of the Fixed Toll component (which was subject to a one-time capital variance adjustment, the period for which has passed).

- DRA commodity that has been used to address the sustained impacts to capacity in 2020 and 2021 - such impacts resulting from real world conditions differing from Keystone's design modeling assumptions - is necessary as a result of the design and construction of the initial Keystone System and Cushing Expansion.

The Phase 1 Decision also established that there are other uses of DRA of which the expenses are properly categorized as operating expenses and are recoverable in the Variable Toll. The Commission found that:

- DRA commodity used to mitigate the impacts of pressure restrictions, planned maintenance activities and unplanned outages is properly categorized as an operating expense and is recoverable in the Variable Toll.

- The capacity impacts resulting from pressure restrictions and maintenance activities (planned and unplanned) are different in nature from the nominal capacity shortfalls resulting from Keystone's design assumptions. Pressure restrictions and maintenance activities are typically temporary in nature, and typically do not relate to long-term and sustained shortfalls of nominal capacity that result from the design and construction of the system.

- DRA commodity used in 2020 and 2021 in response to pressure restrictions, maintenance activities and unplanned outages are appropriately viewed as related to the temporary maintenance of existing capacity. These operational uses of DRA provide for increased system reliability and are not required to provide a sustained and long-term nominal capacity of approximately 590,000 bpd, and therefore the expenses of such are recoverable in the Variable Toll pursuant to the Original TSAs.

In the Phase 1 Decision, the Commission did not make findings on a methodology that could be used to allocate DRA expense to the two broad categories described above, noting that the methodology offered by South Bow in response to Commission IRs was not well-tested by parties in the proceeding. The Commission stated that it expected South Bow to discuss the allocation methodology with its shippers and stated that the methodology may consider factors such as the associated accuracy, fairness, and administrative burden. Further, the methodology should be transparent in how categories of DRA use are determined, as well as transparent in the potential layering of cost categories.

Condition 1 of the Phase 1 Decision's accompanying Phase 1 Order required that:

1. [South Bow] must, by 14 March 2023, recalculate and refile with the CER the committed and uncommitted estimated tolls and committed finalized tolls for the years 2020 and 2021 to remove the following costs from the Variable Tolls as they pertain to the Canadian Patoka and Canadian Cushing TSAs and Other TSAs as applicable:

    a. Expenses of DRA commodity used to provide capacity due to higher flowing viscosities than assumed in the design of the system (including as it relates to lower soil temperatures, more volumes heading to Cushing, and for shipper specific commodities) and expenses of DRA used to address the lower pump station discharge pressures;

    b. Capital-related costs associated with the upgraded pressure control valves program; and

    c. Carrying charges associated with capital costs recovered in the Variable Tolls and not treated as a non-routine adjustment.

Condition 2 of the Phase 1 Order required that:

2.  [South Bow] must, if it is unable to achieve unanimous support from its shippers for its proposed DRA expense allocation methodology:

    a.  include the detailed methodology in the Compliance Filing; and

    b.  demonstrate clearly how DRA expense amounts were specifically allocated to different uses.

# 4    Drag reducing agent allocation methodology

South Bow as well as Phillips and Cenovus proposed different DRA allocation methodologies that they each viewed would comply with the Phase 1 Decision and the Original TSAs. The Commission finds that South Bow's proposed methodology, with a modification to remove the step relating to additional MUR volumes, will result in just and reasonable tolls for 2020 and 2021. For the reasons discussed throughout Chapter 4, the Commission finds that this approach more closely aligns with the Original TSAs and the Phase 1 Decision compared to Phillips and Cenovus' proposal.

This chapter examines the two proposed DRA allocation methodologies. In Sections 4.1 and 4.2, the Commission provides an overview of South Bow's and Phillips and Cenovus' proposals, respectively. The Commission then provides its analysis and findings on the main issues that were raised:

- the use of a hydraulic model (Section 4.3);

- the thresholds used to distinguish DRA categories (Section 4.4);

- a system-wide or segment-by-segment approach (Section 4.5);

- the frequency of allocation calculations (Section 4.6);

- the Pump Station DRA Curves (Section 4.7);

- how outages and pressure restrictions are identified (Section 4.8);

- Make-up Rights (Section 4.9);

- Power Optimization (Section 4.10);

- transparency, administrative effort and an enduring methodology (Section 4.11); and

- finally, the Commission provides its overall decision on the DRA allocation methodology to be used on the Keystone System (Section 4.12).

## 4.1    South Bow proposal

South Bow submitted that its statistical methodology complies with the Phase 1 Decision and the Original TSAs, and represents a fair, reasonable and enduring allocation of DRA expense. By using hourly pump station data, it also is directly aligned with how South Bow operates the Keystone System, including how South Bow determines when and the amount of DRA required to maintain flow rates during restricted and unrestricted operations.

To support its proposal and to respond to the evidence of Phillips and Cenovus' experts Dr. Arthur and Mr. Janzen, South Bow relied on the expert evidence of Mr. Reed and Mr. Moreno of Concentric Energy Advisors, Inc., and Dr. Bidmus and Mr. Bednorz of DNV. As well, Mr. Prins, P. Eng (Director, Commercial Operations), Mr. Melvin (Hydraulics EIT, Capacity Optimization) and Mr. Amorim (Manager, Commercial Asset Management and Integrated Planning) provided testimony as company witnesses during cross-examination.

South Bow calculated DRA allocations based on its methodology which resulted in the allocations summarized in Table 1 and Table 2 below.

**Table 1: DRA – Allocation amounts under South Bow's proposal before MUR allocation**

|  | Total DRA expense | Amount allocated to South Bow | % to South Bow | Amount allocated to the Variable Toll | % to Variable Toll |
|---|---|---|---|---|---|
| **2020** | $30,047,180 | $9,692,099 | 32.26% | $20,355,081 | 67.74% |
| **2021** | $9,556,621 | $8,205,087 | 85.86% | $1,351,534 | 14.14% |

**Table 2: DRA – Allocation amounts under South Bow's proposal after MUR allocation**

|  | Total DRA expense | Amount allocated to South Bow | % to South Bow | Amount allocated to the Variable Toll | % to Variable Toll |
|---|---|---|---|---|---|
| **2020** | $30,047,180 | $8,893,965 | 29.60% | $21,153,215 | 70.40% |
| **2021** | $9,556,621 | $7,530,617 | 78.80% | $2,026,004 | 21.20% |

South Bow's proposed methodology is summarized below.

Step 1: Categorize Sustained and Temporary Operations DRA

To start, South Bow defines two categories of DRA use identified in the Phase 1 Order:

1. **Sustained Operations DRA** (to South Bow's account)

   All DRA costs when the system is operating unrestricted, including to address sustained capacity impacts from actual operating conditions differing from original design assumptions, and to expand capacity for incremental volumes.

2. **Temporary Operations DRA** (recovered in Variable Toll)
   a. Planned maintenance and unplanned outages
   b. Pressure restrictions
   c. Power optimization
   d. Saturation DRA

The methodology is initiated under the assumption that the system is in a Sustained Operations state. Then, when a Temporary Operations event happens, South Bow can identify the DRA expenses required for that timeframe, as illustrated by the following figure:

**Figure 1: South Bow Step 1 – Categorize Temporary and Sustained Operation DRA during an outage**

**Step 1: DRA Categorization**
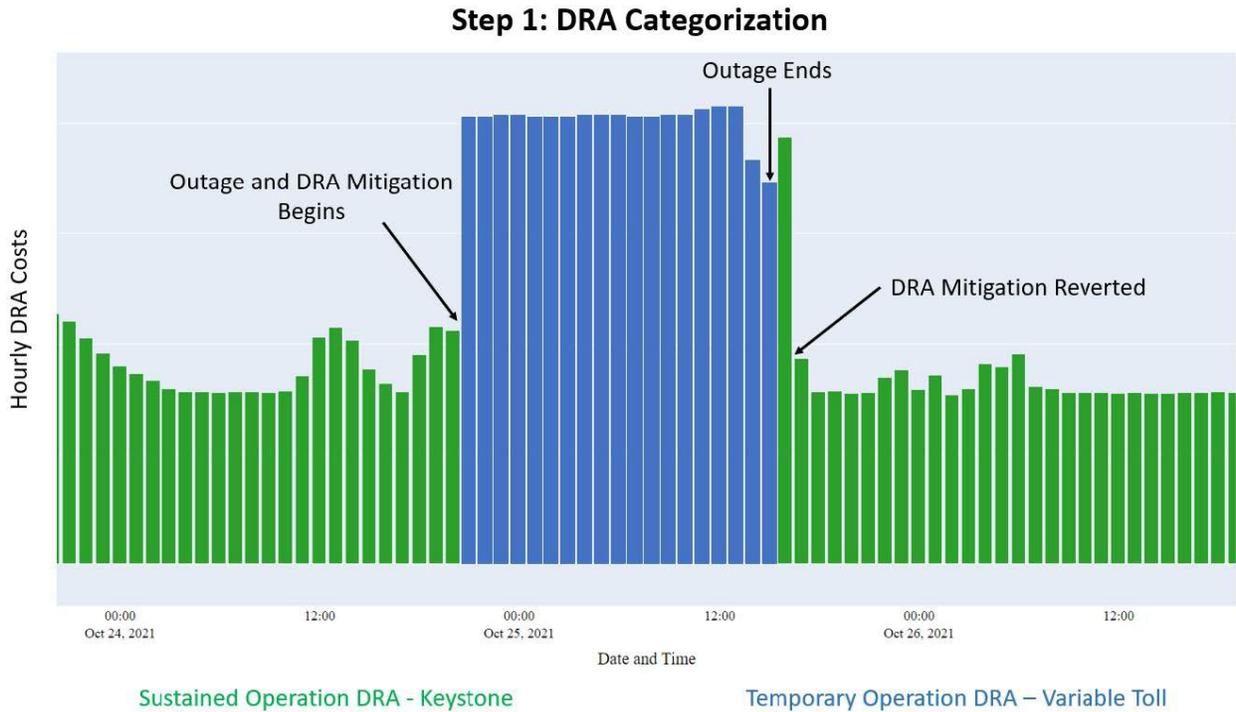


There are several classifications within Temporary Operations that are identified automatically in South Bow's algorithm using pump station status identified in South Bow's Supervisory Control and Data Acquisition (**SCADA**) system.[17] For example, South Bow identifies planned maintenance and unplanned outages when equipment or a facility is unavailable or running as classified through the SCADA system, and concurrently DRA injections deviate by half a standard deviation from typical injections. South Bow identifies pressure restrictions when pump station data shows Maximum Allowable Discharge Pressure (**MADP**) is below the Sustained Operations MADP, identified by a one standard deviation drop in MADP.

Power Optimization DRA is used to reduce the amount of power consumption required by pump stations during periods of elevated power prices. DRA is used in this instance when the incremental expense of DRA is less than amount of power costs saved, resulting in a reduction in operating expenses. South Bow uses tools and forecasts to identify opportunities for power optimization.

Saturation DRA is included in Temporary Operations, which is DRA used prior to planned maintenance, pressure restrictions, and power optimization events, since DRA requires time to

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17  SCADA is the Supervisory Control and Data Acquisition, a system for transmitting the information and data necessary for the operation of the pipeline facility via communication networks.

take full effect. South Bow will use a manual process to tag these events, but will seek to automate this.

Step 2: Layer Sustained and Temporary Operations DRA and adjustments

The next step addresses the issue that, during a Temporary Operations event, the total DRA injection at any given pump station could simultaneously be used for both Sustained Operations and to mitigate Temporary Operations; this is referred to as "layering".

*Step 2a: Identification of Sustained Operations DRA during Temporary Operations*

Pump Station DRA Curves are used to identify the DRA expense required for Sustained Operations, during Temporary Operations. The Sustained Operations DRA expense is subtracted from the total expense of DRA required to maintain the system flow rate at that pump station:

Temporary Operations DRA expense =
(Total DRA expense at hourly flow rate) – (Sustained Operations DRA expense)

Pump Station DRA Curves are used to determine the hourly DRA expense for Sustained Operations. For each hour during a Temporary Operations event, South Bow has developed an algorithm that identifies the flow rate equivalent (x-axis) along the Pump Station DRA Curve and the corresponding hourly DRA expense (y-axis) for that pump station:

**Figure 2: Example of a Pump Station DRA Curve use**
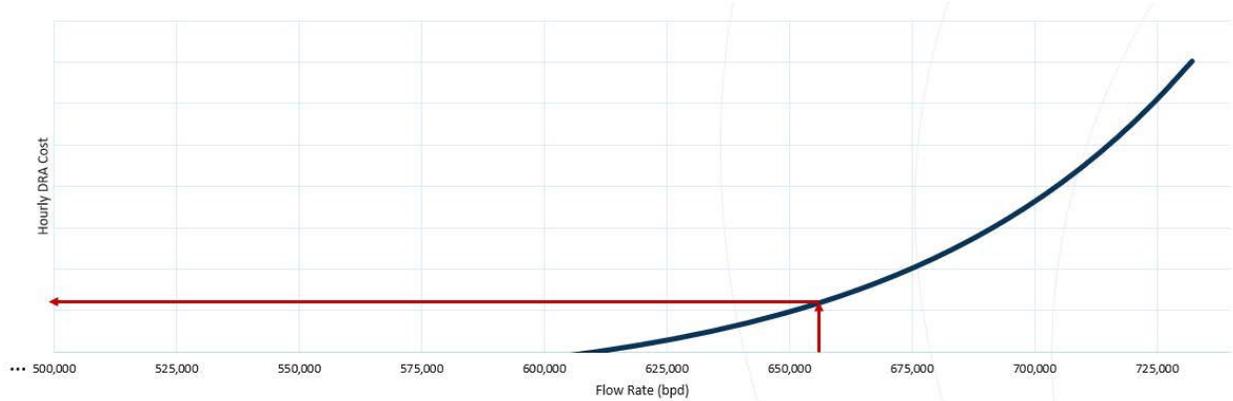


*Step 2b: DRA effectiveness curve adjustment*

The purpose of this step is to allocate the costs for the "least expensive and more effective" DRA to Temporary Operations DRA. The use of DRA has diminishing marginal returns; that is, each additional unit of DRA injected is less effective than the previous unit of DRA injected. This step adjusts the allocation of DRA using South Bow's DRA effectiveness curves. The adjustment is completed by determining how much drag reduction is needed for Sustained Operations (using the Sustained Operations DRA expense identified in step 2a) and shifting that to the "more expensive and least effective" DRA. In effect, Temporary Operations is allocated the first DRA unit(s) injected, while the DRA allocated to Sustained Operations is the remaining

DRA which is less effective and therefore more DRA is required to achieve the required drag reduction.

The South Bow Corrected DRA expense, which is the Sustained Operations DRA identified in Step 2a) that is then shifted to the "more expensive and least effective" DRA, is subtracted from the Total DRA expense for that month to determine the adjusted customer cost:

Customer Corrected DRA expense = Total DRA expense – South Bow Corrected DRA expense

**Figure 3: DRA effectiveness curve adjustment**
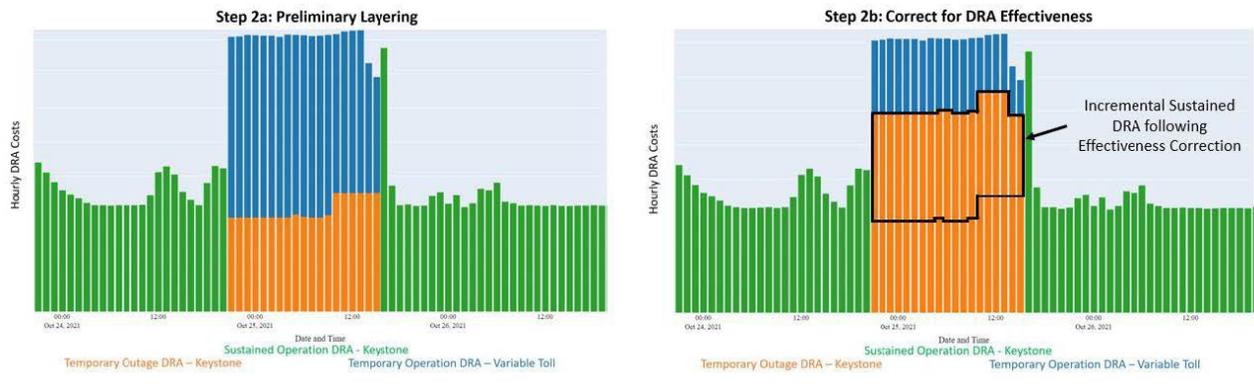


Step 3: Determine additional make-up rights allocation

South Bow submitted that it has a common-carrier obligation to maintain 6 per cent of the nominal capacity for uncommitted volumes. When this uncommitted volume exceeds 6 per cent of the nominal capacity, this benefit comes at the expense of increased Sustained Operations DRA. If a portion of those volumes are additional MURs,[18] the associated incremental cost will be included in the Variable Toll as the capacity would not otherwise be created or available without the continuous usage of incremental DRA above the sustained requirements. In this step, South Bow identifies the DRA expense associated with uncommitted volumes above 6 per cent of nominal capacity and then multiplies that expense by the ratio of MUR volumes in the uncommitted volumes. This amount is then added to the Customer Corrected DRA expense from Step 2B for inclusion in the Variable Toll.

Additional details regarding South Bow's proposal are provided throughout Chapter 4. See Section 4.7 for additional information on South Bow's Pump Station DRA Curves, Section 4.8 for how temporary events are identified, and Section 4.9 for the MUR proposal.

## 4.2    Phillips and Cenovus proposal

Phillips and Cenovus proposed an alternative DRA allocation methodology that uses hydraulic modelling. In their view, their proposal correctly implements the Phase 1 Decision and would

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[18]   Committed shippers that tender less volumes than their committed monthly volumes may accrue make-up volumes equal to the shortfall, subject to available capacity.

more easily and accurately allocate DRA expenses between mitigation uses of DRA and expansion related uses. The two main features of the methodology that, in Phillips and Cenovus' view, properly implement the Phase 1 Decision are:

1)  it uses the Keystone System's non-DRA nominal capacity as a threshold to determine when South Bow uses DRA for mitigation versus expansion purposes; and

2)  it calculates achievable non-DRA flow rate on a monthly average basis to determine if the cumulative impact of DRA usage to mitigate temporary events represents an expansion of nominal capacity.

Under the proposal, each month, all DRA required to maintain the non-DRA nominal capacity would be recoverable through the Variable Toll (**Mitigation DRA**). Any DRA used to push the Keystone System above its non-DRA nominal capacity would be treated as expansion DRA and allocated to South Bow's account (**Expansion DRA**). Phillips and Cenovus recommended changing South Bow's terminology from "Sustained" and "Temporary" DRA to "Expansion" and "Mitigation" to lower the confusion on how DRA is classified for inclusion or exclusion from the Variable Toll.

Phillips and Cenovus noted that no shippers supported South Bow's proposed methodology. Of the 12 committed shippers on the Keystone System, eight shippers voted against South Bow's proposal and four abstained. In Phillips and Cenovus' view, this significant shippers' opposition should weigh heavily against the approval of South Bow's Compliance Filing.

Phillips and Cenovus relied on the expert evidence of Dr. Arthur and Mr. Janzen, P. Eng. Using Phillips and Cenovus' proposed methodology, Mr. Janzen calculated that no Mitigation DRA would be included in the Variable Toll in 2021. All DRA expense would be categorized as Expansion DRA paid for by South Bow. Mr. Janzen's calculations were limited to March 2021 to December 2021, because those were the only months that South Bow provided the discharge and suction pressures needed for the calculations.

Based on South Bow's understanding of Mr. Janzen's proposed methodology, South Bow calculated the approximate resulting DRA allocations summarized in Table 3 below, which were not disputed by Phillips and Cenovus.

**Table 3: DRA – Allocation amounts under Phillips and Cenovus' proposal**

|  | Total DRA expense | Amount allocated to South Bow | % to South Bow | Amount allocated to the Variable Toll | % to Variable Toll |
|---|---|---|---|---|---|
| **2020** | $30,047,180 | $28,103,490 | 93.53% | $1,943,690 | 6.47% |
| **2021** | $9,556,621 | $9,556,621 | 100% | $0 | 0% |

The Phillips and Cenovus methodology is summarized below.

**Step 1:** Input monthly average data points, derived from SCADA data for the month, into South Bow's steady-state hydraulic model. The necessary monthly-average data are as follows: flowrate, MADP, station discharge pressure, next station suction pressure, specific gravity of the crude oil, and total DRA injection by segment.

**Step 2:** Using South Bow's steady-state hydraulic model, calculate whether any mitigation DRA was necessary to achieve the Keystone System's nominal capacity over the course of the month. This step can be further broken into two sub-steps:

**Step 2(i):** Use the hydraulic model to calculate each segment's monthly average viscosity based upon other known operating data inputs.

**Step 2(ii):** Using the calculated monthly-average viscosity for each segment, assume South Bow used all reasonably available pumping power over the course of the month and set drag reduction to zero (i.e., no DRA injections) to calculate each segment's monthly-average non-DRA 'achievable flow rate'. Conceptually, this represents the flow rate each segment could have achieved given the actual operating conditions over the month, but without the use of any DRA.

**(A)** If the achievable non-DRA monthly average flow rate for a given segment is equal to or above the Keystone System's non-DRA nominal capacity, then no mitigation DRA was required for that segment during that month. On the other hand, if the achievable non-DRA monthly average flow rate for a given segment was below the non-DRA nominal capacity, then South Bow did require mitigation DRA.

**(B)** In the latter case, use South Bow's hydraulic model to calculate the percentage drag reduction required to increase the segment's achievable monthly average flow rate for the month to the Keystone System's non-DRA nominal capacity. In effect, DRA is added back into the model until the segment's achievable flow rate for the month is equivalent to the Keystone System's non-DRA nominal capacity.

**Step 3:** In a given month where mitigation DRA was required for a given segment, then use the percentage drag reduction calculated in Step 2(ii) and South Bow's DRA effectiveness curves to calculate the DRA concentration required to achieve a flowrate equivalent to the Keystone System's non-DRA nominal capacity. In other words, calculate how much DRA the segment needed in order to mitigate the cumulative impacts of the temporary events that prevented the segment from achieving a monthly average flow rate equivalent to non-DRA nominal capacity. This is the amount of recoverable mitigation DRA for a given segment in the month; the corresponding cost is calculated by multiplying the total volume of mitigation DRA by DRA cost per gallon. This cost is recoverable through the Variable Toll.

In argument, HF Sinclair, a committed shipper on the Keystone System, stated that it fully supports the positions taken by Phillips and Cenovus. HF Sinclair requested that the Commission require South Bow to adjust its proposal in accordance with the Phillips and Cenovus DRA allocation methodology.

Additional details regarding Phillips and Cenovus' proposal are provided throughout Chapter 4. See Section 4.3 for information regarding the use of a hydraulic model, Section 4.4 for the proposed non-DRA nominal capacity threshold, Section 4.5 for the use of a system-wide threshold, and Section 4.6 for monthly calculations.

## 4.3    Hydraulic model

As described above, Phillips and Cenovus' proposed methodology involved the use of a hydraulic model, which is a simplified representation of a pipeline system used to simulate the behavior of fluids. Parties debated the appropriateness of using a hydraulic model to allocate DRA costs.

*Views of South Bow*

South Bow opposed the use of a hydraulic model in a DRA allocation methodology. South Bow considered using a hydraulic model but chose not to due to the need for numerous modelling assumptions, which leads to results that are less accurate and fair than a methodology that uses hourly operational data.

While South Bow uses a hydraulic model for certain functions on its system, it is extremely difficult to use hydraulic modelling to accurately reflect true operations. A hydraulic model is always an approximation tool, not a tool to accurately depict actual operations. South Bow uses its hydraulic model to predict system hydraulics at a specific point in time (e.g., when planned maintenance is scheduled to occur), in conjunction with other operational information and experience, to inform go-forward operational decisions. The Phillips and Cenovus methodology proposes to use South Bow's model to achieve a look-back allocation of expenses relying on monthly average data – not a purpose for which the model was developed. South Bow stated that in 2021, it moved away from using hydraulic modelling to determine DRA injections and instead rolled out an automated DRA injection logic. South Bow stated that it does use a hydraulic model to determine the amount of DRA required to mitigate outages.

Hydraulic modelling requires the use of assumptions, such as the viscosity of petroleum in the pipeline, which have a large impact on the results. For example, Mr. Janzen relied on a single monthly average viscosity value for the entire system. In reality, there are 110 batches in the system at any given time, all with different viscosities. Implementing a methodology that can be impacted by the assumptions enough to materially change the allocation of expenses would be susceptible to future conflict and disagreement on those assumptions. For this reason, South Bow created a methodology that relies on operational data rather than being influenced by the inputs, assumptions and approach to executing the methodology. As well, the errors in allocations that result from inaccurate modeling assumptions are biased in one direction of the allocations. This is unlike South Bow's DRA Pump Station Curves, where the errors would

average out in both directions over time, since actual DRA costs could equally be above or below the costs identified by the curves.

South Bow pointed to the different resulting allocations from Mr. Janzen's proposed methodology and the methodology presented by Mr. Vanderpool, who had previously provided expert evidence on behalf of Phillips and Cenovus but withdrew from the current case. Mr. Janzen, while adopting the majority of Mr. Vanderpool's evidence, made several key changes to Mr. Vanderpool's methodology, including relating to viscosity and pressure assumptions, which caused the amount of DRA allocated to the Variable Toll to decrease significantly:

- For 2020, Mr. Vanderpool's methodology calculated that roughly 65 per cent of DRA costs be included in the Variable Toll, whereas Mr. Janzen's proposal resulted in only 6.5 per cent being included.

- For 2021, Mr. Vanderpool's methodology calculated that roughly 5 per cent of DRA costs should be included in the Variable Toll, whereas Mr. Janzen's proposal resulted in 0 per cent being included.

In South Bow's view, this illustrates how sensitive hydraulic models are to assumptions. Different experts, even with the same methodology and the same objectives, can disagree on what assumptions to use, producing wildly varying results. There would likely be continuous disputes regarding modelling assumptions, resulting in more litigation before the Commission, which would add significant administrative and regulatory burden.

***Views of Phillips and Cenovus***

Phillips and Cenovus emphasized that their DRA allocation methodology relies on South Bow's own hydraulic model of the Keystone System. All operators of major pipelines maintain a hydraulic model of their pipeline system, which is calibrated using operating data to ensure the model accurately predicts system performance. Hydraulic models used in the pipeline industry have a typical percentage error of no more than 2 per cent.

Phillips and Cenovus submitted that based on the Phase 1 Decision, a DRA expense allocation methodology must be one that can differentiate between expansion versus mitigation uses of DRA. It must do so in circumstances where South Bow is continuously injecting DRA for expansion purposes, even in the absence of any pressure restrictions or outages. In such circumstances, the question of "when does mitigation end and expansion begin?" is fundamentally a hydraulics question.

When South Bow injects DRA into the system, it does not record whether that DRA was injected to mitigate a temporary operating event or to expand the system's nominal capacity. As such, it is necessary to look at system operations over a given time period to determine how much DRA was needed to achieve system nominal capacity, and how much went to expanding nominal capacity. The best way to answer this question is on a look-back basis, using hydraulic analysis.

The proposed hydraulics methodology is based on hydraulic modelling, which in turn is based on the physical characteristics of the Keystone System. The steady-state hydraulics model is, like any model, on approximation of the physical system it seeks to emulate, that relies on assumptions and estimates where necessary. However, the use of a hydraulic model is tethered directly to the physical characteristics of the Keystone System itself, which are what determine and underpin the concepts of nominal capacity and flow rate-limiting operating events.

South Bow's own hydraulic model is used on a day-to-day and month-to-month basis for highly similar purposes as in Phillips and Cenovus' proposed DRA allocation methodology. For example, when an unplanned outage occurs on the system, South Bow uses its steady-state hydraulic model to estimate the impacts of the outage and calculate how much DRA to inject to mitigate the impact. This is an important point, because South Bow's own methodology relies in part on identifying temporary operating states based on its own DRA injections. In Phillips and Cenovus' view, clearly, South Bow can and does trust its steady-state hydraulic model, and it relies upon it frequently.

In response to South Bow's concerns regarding the modelling assumptions that are needed in a hydraulic model, Phillips and Cenovus submitted that:

- The mere fact of relying on assumptions is, of course, unavoidable and not a flaw in and of itself.

- The South Bow methodology itself relies on numerous assumptions, including that the Pump Station DRA Curves correctly approximate the relationship between DRA cost and throughput.

- For the most part, the assumptions underlying the methodology are built into the South Bow hydraulic model itself, and the additional assumptions are reasonable and appropriate.

### 4.3.1    Commission analysis and findings

While the Commission preferred South Bow's proposed approach using operational data and statistical methods, the Commission does not find that a hydraulic model, in general, cannot form the basis for an allocation methodology. Although assumptions must be made to use a hydraulic model, those assumptions can be informed and validated by the actual operating conditions on the system. South Bow uses a hydraulic model itself to inform operational decisions, including, at least in part, relating to its choices on DRA injections.

Ultimately, the Commission was persuaded that the proposed hydraulic model had a number of key disadvantages compared to South Bow's proposal. For example, the use of a hydraulic model could involve additional administrative and regulatory effort. The use of a hydraulic model introduces additional assumptions that must be made and that the parties would need to agree on, or that would need to be adjudicated, compared to South Bow's approach that uses empirical representations of hourly DRA costs required to achieve flow rates. The significant differences between allocations resulting from Mr. Janzen's and Mr. Vanderpool's choices of assumptions highlighted how significantly adjustments in assumptions would affect resulting allocations.

Finally, the Commission also considered that the assumptions in a hydraulic model could result in allocations that are consistently biased in one direction, which is different than the statistical errors with South Bow's proposed Pump Station DRA Curves. Under South Bow's approach, at different times the Pump Station DRA curves could underestimate or overestimate the actual Sustained Operations DRA during Temporary Events, since the curves represent the typical hourly DRA costs in a dynamic system. However, South Bow's statistical method minimizes the sum of the squared errors, thereby minimizing the overall error with less bias towards South Bow or its shippers.

## 4.4    Threshold for identifying Sustained/Expansion DRA versus Temporary/Mitigation DRA

The two proposed DRA allocation methodologies used different thresholds, and different approaches to the thresholds, for differentiating uses of DRA.

### *Views of South Bow*

South Bow's proposal uses the operational flow rate[19] of each piping segment as the threshold for allocation. Flow rate is typically measured in m³/hr and represents the operational volume transported on an hourly basis. To achieve available capacity[20] in a given month, South Bow sets a target flow rate that is higher than available capacity to account for operating constraints (i.e., disruptions). DRA is injected into the system to achieve and maintain the target flow rate. The DRA allocation threshold is only active for the duration of temporary events. Under South Bow's proposal:

- The DRA used to achieve the flow rate during Sustained Operations is the DRA injected to expand capacity and is a cost incurred by South Bow.

- The incremental DRA injected to maintain the flow rate and mitigate the impact of a pressure restriction or outage is an operating expense allocated to the Variable Toll.

By increasing the maximum achievable flow rate on a sustainable basis through the use of DRA, Sustained DRA is therefore the DRA that increases the nominal capacity of the system. This DRA is removed from the Variable Toll, consistent with the Phase 1 Decision. During Temporary Operations, South Bow differentiates DRA used to expand nominal capacity from the DRA used to mitigate the impact of the event and maintain capacity. South Bow submits that the methodology accounts for this dual use of DRA that occurs during temporary events through "layering".

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[19]  South Bow added that flow rate is connected to capacity and therefore the non-DRA hydraulic maximum flow rate is the relevant variable to use in a DRA allocation methodology.

[20]  Available capacity is the estimated maximum volume of liquid that can move through a pipeline in a given time period based on assumptions about the system's operating conditions.

Layering is the process of determining which portion of DRA is allocated to Sustained Operations while simultaneously allocating a portion of DRA to Temporary Operations. This calculation is based on the Sustained Operations flow rate, set each month by South Bow at the beginning of the month and dynamically adjusted during the month to reflect operating conditions and to reach a target monthly throughput. The DRA used to achieve the flow rate during Sustained Operations is the DRA injected to expand capacity and is a cost incurred by South Bow. During a temporary event, incremental DRA is injected to maintain the target flow rate and mitigate the impact of a temporary pressure restriction or outage, and this incremental temporary event DRA is an operating expense allocated to the Variable Toll. If the system's reliability was different than initially anticipated earlier in the month or if South Bow could not mitigate the temporary events, and South Bow accordingly raises the target flow rate part way into a month to achieve the target monthly throughput, the associated increased use of DRA would be categorized as Sustained Operations DRA paid for by South Bow. There are also circumstances during the month when South Bow may not be able to mitigate a temporary event with DRA, or in very rare circumstances partially mitigate the event. Optimizing the operability of the system includes adjusting DRA injections all the time to achieve the target flow rate, which is Sustained Operations DRA if no temporary event is identified.

South Bow disagreed with Dr. Arthur's assertion that its methodology inappropriately includes Expansion DRA in the Variable Toll. Sustained Operations DRA is injected in the absence of a temporary restriction and is therefore used to increase the maximum achievable flow rate of a piping segment. The cost of Sustained Operations DRA is removed from the total DRA cost, with the remaining DRA cost allocated to the Variable Toll, which is consistent with the Commission's Phase 1 Decision.

South Bow stated that the Phillips and Cenovus methodology disregards the Commission's findings that DRA used to mitigate temporary events is an operational expense and is therefore recoverable through the Variable Toll. The Commission also noted in the Phase 1 Decision the potential layering of cost categories, which is not achievable in a single monthly threshold methodology because it fails to capture the level of granularity that corresponds to the operational use of DRA. By limiting Mitigation DRA to only circumstances when the pipeline system is operating below its non-DRA nominal capacity, the methodology improperly excludes DRA used to mitigate temporary events when the system is operating above the non-DRA nominal capacity. This approach is inconsistent with the TSAs, which state that all OM&A costs are recoverable in the Variable Toll.

South Bow also argued that the Phillips and Cenovus proposal to use 535,000 bpd as the system's non-DRA nominal capacity is not reliable. The 535,000 bpd figure was a response to an IR from June 2021 that stressed several assumptions were used, and the response was not in the context of developing an expense allocation methodology. In separate instances DNV, South Bow and Mr. Janzen calculated the non-DRA hydraulic maximum flow rate of the system to different ranges (613,000 to 650,000 bpd, 625,000 to 633,000 bpd and 591,000 to 626,000 bpd, respectively). Also, based on South Bow's two-week test in May of 2021 that resulted in a 625,000 to 633,000 bpd non-DRA maximum hydraulic flow rate, an SOF of 0.92 applied would calculate a non-DRA nominal capacity of between 576,000 to 583,000 bpd. This demonstrates that the use of assumptions and different engineering approaches produces

different threshold results, and as such, a non-DRA nominal capacity threshold is not reliable nor appropriate to allocate DRA use and expenses.

South Bow stated that the principal concept of Phillips and Cenovus' methodology is to charge any DRA used beyond a static non-DRA nominal capacity of 535,000 bpd to South Bow, regardless of whether the incremental DRA is used to mitigate the impact of a temporary pressure restriction or outage and maintain the capacity of the system. South Bow's position is that the non-DRA nominal capacity of the system becomes irrelevant once the system's capacity has been expanded with DRA. Based on the long-term sustainable capacity that considers the time-period of several years surrounding the reference period, South Bow stated that the nominal capacity of the Keystone System in 2020 and 2021 was 591,000 bpd. In the Phase 1 Decision, the Commission concluded that DRA expenses incurred "in response to pressure restrictions, maintenance activities, and unplanned outages are appropriately viewed as related to the temporary maintenance of existing capacity". Dr. Arthur concluded that "existing capacity" refers to the non-DRA nominal capacity of the system. However, this approach ignores the investment South Bow has made to increase the nominal capacity of the system, whether by DRA or otherwise, and does not allow South Bow to recover expenses of DRA associated with operating and maintenance expenses.

South Bow submitted that Dr. Arthur acknowledged that when South Bow increases nominal capacity through a facilities expansion, OM&A costs of operating and maintaining the new capacity are borne by shippers through the Variable Toll. However, he argued that when South Bow increases nominal capacity through a DRA expansion, shippers should not bear the OM&A costs associated with the new capacity. Dr. Arthur suggested that an expansion of nominal capacity through a capital addition changes the hydraulic functioning of the system, whereas a DRA expansion does not. South Bow responded that this is incorrect, because when DRA is injected into an oil pipeline, it does change the hydraulic functioning of the system by overcoming higher viscosities and lower discharge pressures. There is no principled reason why capital expansion projects should be treated differently than DRA expansion projects for the purposes of the TSAs. In both cases, South Bow is responsible for the expansion costs. But in both cases, shippers should bear the responsibility for OM&A costs to operate and maintain the new expansion capacity.

The Commission's use of "existing capacity" in the Phase 1 Decision, based on South Bow's understanding, is referring to the sustained capacity of the system that is maintained with or without the use of DRA. In South Bow's methodology, the allocation of DRA used for expansion purposes is akin to the allocation of costs for a capital project. South Bow would be responsible for the costs that enable the system to achieve a higher nominal capacity, meanwhile the costs to operate and maintain that expanded capacity would be allocated to shippers through the Variable Toll.

Mr. Reed submitted that Dr. Arthur's proposal rests on the assumption that a legacy shipper – the first through the meter – has a special entitlement to capacity on the system regardless of how DRA is used to achieve it. South Bow believes that all costs needed to maintain capacity during temporary constraining events, i.e., both original capacity and expanded capacity, should be included in the Variable Toll. This is consistent with the fact that all committed shippers, both legacy and expansion shippers, pay the Variable Toll, and all

committed shippers have access to available capacity on an equal basis. The TSAs, and the tariff, do not provide for first-class and second-class committed shippers, and there is no "first through the meter" provision for legacy shippers.

***Views of Phillips and Cenovus***

Dr. Arthur and Mr. Janzen recommended that the threshold for determining whether DRA usage is classified as Mitigation or Expansion be based on the system's non-DRA nominal capacity of 535,000 bpd. If that threshold is implemented, any DRA used to achieve monthly throughput for a given segment equal to or below the system's non-DRA nominal capacity would be classified as Mitigation DRA. Any DRA used to achieve monthly throughput above the non-DRA nominal capacity would be classified as Expansion DRA.

In Dr. Arthur's view, the as-built non-DRA maximum hydraulic flowrate intersects with the operational realities of the system's flow rate over a long period of time such as a month, which determines the amount of committed contracts and uncommitted volumes it can transport. Therefore, a single threshold for the creation of "expansion" capacity should be applied based on the non-DRA nominal capacity.

Dr. Arthur stated that the Commission's Phase 1 Decision creates some ambiguity, because offsetting temporary events and outages can result in the expansion of nominal capacity. While the Phase 1 Decision states to divide the two categories of DRA use cleanly, there is DRA that offsets outages and events but results in the expansion of system nominal capacity.
In Dr. Arthur's view, if DRA usage results in the expansion of system nominal capacity, it should be considered expansion DRA and excluded from the Variable Toll. Placing the threshold at the system's non-DRA nominal capacity can differentiate where the DRA is increasing system nominal capacity and when it is offsetting downtime. To properly exclude all expansion DRA, an allocation methodology must account for the normal, expected downtime that is incorporated into nominal capacity through the SOF.[21]

Phillips and Cenovus argued that South Bow's total system non-DRA nominal capacity of 535,000 bpd should be applied because South Bow has publicly stated that its non-DRA nominal capacity in 2020 and 2021 was approximately 535,000 bpd. Mr. Janzen submitted that there are concerns with the South Bow/DNV calculations that would yield a non-DRA nominal capacity of 545,000 bpd to 585,000 bpd. Those are not realistic, since they are based on 2020 and 2021 flowing temperatures which are based on DRA enhanced flowrates. In response to South Bow raising that between 13 May and 20 May 2021 there were no DRA injections and the target flow rates during steady state flow were approximately 4,150 and 4,200 $m^3$/hr (626,000 and 634,000 bpd respectively), Dr. Arthur replied that South Bow did not provide any information on the DRA injections in the US. It is not clear the information would apply to the whole system, and a two-week period is inappropriately implied as representative of operating conditions that will occur over a long period of time.

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[21] The SOF is a numerical factor, less than 1.0, applied to the non-DRA hydraulic maximum flowrate to account for the fact that all components of a pipeline system will not have 100 per cent uptime.

Phillips and Cenovus criticized South Bow's proposal by stating none of the DRA expense incurred to expand the as-built non-DRA nominal capacity from approximately 531,500 bpd to 577,000 bpd would be considered Expansion DRA usage because the flowrate has not increased above the as-built non-DRA maximum hydraulic flowrate. If the threshold is greater than the Keystone System's non-DRA nominal capacity, then some DRA usage is increasing the Keystone System's achievable throughput level (i.e., nominal capacity) above the Keystone System's non-DRA nominal capacity. That DRA usage would be inappropriately classified as temporary DRA usage, because that DRA is expanding nominal capacity that permits Keystone to sell capacity to incremental committed shippers and uncommitted shippers.

The "existing capacity" referred to in the Phase 1 Decision must be the existing as-built non-DRA nominal capacity of the Keystone System in 2020 and 2021. If "existing capacity" was instead the DRA-expanded nominal capacity, then that would suggest that any DRA injected as a result of an unexpected maintenance activity required to maintain the created DRA-expanded nominal capacity would be recoverable in the Variable Toll. However, if that additional DRA increases nominal capacity above the system's non-DRA mechanical nominal capacity, then including that incremental DRA expense in the Variable Toll would be directly contradictory to the Commission's finding that DRA expenses that increase the system's nominal capacity are not recoverable in the Variable Toll.

Phillips and Cenovus also submitted that as DRA injection varies, the DRA-enhanced achievable throughput level of a system, or of an individual pump station, is infinitely variable. If nominal capacity were based upon DRA-enhanced achievable throughput, then there would be no baseline against which to measure when South Bow uses DRA to expand nominal capacity.

In Phillips and Cenovus' view, an increase in the non-DRA nominal capacity through additional pipeline and/or pump station facilities would change the relevant non-DRA nominal capacity threshold for classifying DRA usage as Mitigation or Expansion, whereas a DRA-expansion would not. For determining the relevant threshold, an expansion through a capital addition is not equivalent to the expansion through DRA injection because the capital addition expansion changes the hydraulic functioning of the system, while DRA injection expansion does not. If the threshold is dependent on the DRA-enhanced nominal capacity, there is no apparent basis for anchoring on any specific level of DRA-enhanced achievable throughput, since the achievable throughput is infinitely variable based upon the quantity of DRA injected at any point in time. There is no apparent principled basis why one DRA-enhanced throughput level would be more appropriate than any other of the infinite levels possible.

### 4.4.1    Commission analysis and findings

The Commission finds that South Bow's proposed threshold, based on the operational flow rate, more accurately aligns with the Phase 1 Decision and the terms of the Original TSAs. This threshold allows for allocations between both Sustained/Expansion DRA and Temporary/Mitigation DRA categories during temporary events, even during periods that the system is capable of achieving its non-DRA nominal capacity without DRA. Conversely, the non-DRA nominal capacity threshold proposed by Phillips and Cenovus requires that all DRA

used in response to temporary events be allocated to Expansion DRA, as long as the system can achieve the 535,000 bpd non-DRA nominal capacity without DRA.

The Commission acknowledges that the proposed thresholds have different functions for how they are used in the respective methodologies. For example, the South Bow threshold based on operational flow rate only applies during temporary events (outside of temporary events, all DRA expense is allocated to South Bow). During an event, the DRA that is typically used to achieve a given flow rate is removed from the Variable Toll. In contrast, the Phillips and Cenovus methodology uses a single non-DRA nominal capacity threshold to clearly separate Expansion and Mitigation DRA used either above or below the threshold.

Given that the Keystone System's nominal capacity has been expanded through sustained DRA use[22] and the Commission's finding that the DRA expansion should conceptually be treated similarly as a capital expansion project for the purposes of the Original TSAs, the 535,000 bpd non-DRA nominal capacity threshold as used by Phillips and Cenovus does not properly allocate DRA costs. This threshold does not sufficiently address that there are DRA costs associated with operating and maintaining the DRA-expanded capacity in response to pressure restrictions, planned maintenance, and unplanned outages. In circumstances where the system is able to operate above 535,000 bpd without the assistance of DRA, it does not follow that any or all uses of DRA in such a situation would represent an expansion of long-term sustainable capacity.

Phillips and Cenovus submitted that, for determining the relevant threshold, an expansion through a capital addition is not equivalent to an expansion through DRA injection, because a DRA expansion does not change the hydraulic functioning of the system. South Bow responded that DRA does in fact change the hydraulic functioning of the system by overcoming flow rate limits imposed by higher viscosities and lower discharge pressures. The Commission was not persuaded that a DRA expansion should conceptually be treated differently than a capital expansion, especially given the Phase 1 Decision that found the central role of DRA itself, through sustained uses, in expanding pipeline capacity. For the purposes of the Original TSAs, DRA injections can be akin to a facility expansion – a point similarly made by Phillips and Cenovus in the Phase 1 hearing.[23]

South Bow's proposed threshold approach, based on flow rate, would more appropriately allocate DRA to both Sustained/Expansion and Temporary/Mitigation categories through its layering process. The costs incurred to expand nominal capacity through sustained DRA use are accounted for and paid by South Bow in its methodology. The Temporary Operations DRA is a cost of operating expanded capacity levels, even if temporary events did not reduce the monthly achievable flow rate without DRA below 535,000 bpd. The Phillips and Cenovus methodology would not reflect the risk allocation agreed to in the Original TSAs, namely that shippers agreed to pay all OM&A costs of the Keystone System, which may be expanded from time to time.

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[22]  South Bow submitted that the DRA-expanded nominal capacity in 2020 and 2021 was 591,000 bpd.

[23]  Phillips & Cenovus, Phase 1 Written Argument, Filing ID C20963-2 (16 September 2022) at para 195 (pdf 78).

The Phase 1 Decision found that DRA used in response to pressure restrictions, maintenance activities and unplanned outages are appropriately viewed as related to the temporary maintenance of existing capacity and properly categorized as an operating expense recoverable in the Variable Toll. Based on the proposals presented to the Commission, the threshold based on operational flow rate within South Bow's methodology can more appropriately distinguish the uses of DRA between the temporary maintenance of existing capacity and the long-term sustained shortfalls of nominal capacity.

The Commission considered that South Bow makes changes to the target operational flow rate and may adjust the mitigation of temporary events in the latter part of the month to achieve a target monthly throughput. South Bow's evidence is that it accepts the sustained increases to operational flow rate in the latter part of the month (e.g., if there was more downtime than expected earlier in the month) as allocated to Sustained Operations DRA. No compelling evidence was submitted that this operational process of mitigating temporary events during the first part of the month, and subsequently changing flow rate in the latter part of the month, is improper. The Commission is not persuaded that a dynamic operational flow rate threshold misclassifies DRA, or that a calculation could not be performed based on a changing threshold. A methodology's ability to adjust the calculations to reflect the dynamic nature of a changing threshold is not a disadvantage of the methodology itself.

## 4.5    System-wide or segment-by-segment threshold

Phillips and Cenovus proposed the use of a system-wide threshold that would apply one standard threshold across the entire pipeline system. South Bow proposed using a segment-by-segment approach that would apply a different threshold at each pipeline segment between pump stations. Both methodologies calculated the allocation of DRA on a segment-by-segment basis based on its respective setting of a threshold.

*Views of South Bow*

South Bow stated that the methodology should be based on a segment-by-segment basis, and not based on a system-wide threshold. South Bow submitted that its segment-by-segment approach reflects the way the system is operated and is directly linked to cost causation.

For expansion purposes, each piping segment requires a different amount of DRA to increase the non-DRA hydraulic maximum flow rate of each piping segment up to the target flow rate. DRA that is used to overcome lower pump station discharge pressures and higher flowing viscosities than assumed in the design for each pipe segment is the Sustained/Expansion DRA. The total DRA used for expansion is the total DRA used to expand the nominal capacity of each piping segment. The majority of piping segments in Canada could achieve the hydraulic maximum flow rate for the nominal capacity without DRA in 2020 and 2021. If South Bow had to use DRA at one of those segments, it should be classified as Mitigation/Temporary DRA.

South Bow disagreed with the use of a system-wide threshold, set at the non-DRA nominal capacity of the system, because that is not the limit of differentiation between expansion and mitigation uses of DRA and does not align with the hydraulics of the system. This threshold is defined by one piping segment with the least hydraulic capacity, but as a bottleneck is removed,

it raises the capacity of the system to the next level of the bottleneck. South Bow would not be able to collect OM&A at that new capacity.

South Bow argued that by applying a single system-wide threshold, Phillips and Cenovus' methodology fails to acknowledge that the Commission directed South Bow to allocate DRA expenses into specific categories of use: 1) to provide a sustained and long-term nominal capacity, and 2) to respond to temporary events to maintain existing capacity. The amount of DRA used to mitigate a temporary event is not relative to the non-DRA nominal capacity of the system, but rather, it is relative to the magnitude and duration of the pressure restriction or outage experienced in that segment.

***Views of Phillips and Cenovus***

Phillips and Cenovus submitted that a threshold should be based on a system-wide non-DRA nominal capacity threshold. It is the system-wide non-DRA nominal capacity, as defined by the lowest non-DRA nominal capacity of any segment, that determines the amount of capacity that can be made available on a pipeline system. Comparatively, the amount of capacity that can be made available is not determined by the non-DRA nominal capacity of individual pump station segments where it is greater than the lowest non-DRA nominal capacity segment.

Phillips and Cenovus considered it a question of hydraulics to differentiate DRA use between mitigation and expansion. A monthly look-back analysis would calculate the quantity of DRA required to maintain the system's non-DRA nominal capacity, factoring in any pressure restrictions or outages. Apart from DRA used for Power Optimization, DRA used to increase the nominal capacity above the non-DRA nominal capacity threshold would be classified as expansion and would not be recoverable in the Variable Toll.

If an individual pump station has a temporary event that reduces its monthly nominal capacity, but the flow rate is still above the Keystone System's non-DRA monthly threshold, that DRA use should be classified as Expansion DRA because DRA use would be serving to expand the system's nominal capacity beyond the system's non-DRA nominal capacity threshold. If an individual pump station has an event that reduces its monthly nominal capacity below the Keystone System's non-DRA monthly capacity threshold, then the DRA used to return the monthly capacity up to the non-DRA nominal capacity is mitigation DRA and charged to the Variable Toll.

Phillips and Cenovus were of the view that a segment-by-segment threshold erroneously identifies the expansion of capacity beyond the non-DRA maximum hydraulic flowrate as expansion DRA, instead of expansion above the non-DRA nominal capacity of the system. Under South Bow's pump-station by pump-station proposal, DRA that is injected at individual pump stations to expand that pump station's nominal capacity above the system's non-DRA nominal capacity is being used to expand the system's non-DRA nominal capacity. Expansion DRA should be based on a system-wide non-DRA nominal capacity threshold.

## 4.5.1 Commission analysis and findings

The Commission finds that South Bow's proposed segment-by-segment threshold approach more reasonably allocates DRA costs to the specific uses of Sustained/Expansion and Temporary/Mitigation in alignment with the Phase 1 Decision and the Original TSAs. The Commission finds that a segment-by-segment approach recognizes the capacity differences between segments, which allows more precise allocation of DRA between categories. The Commission acknowledges the lowest capacity segment is the limiting segment for the entire system's total capacity at any moment. However, with the wide variation in segment capacity and the associated varying amounts of DRA required in each segment, using a system-wide threshold could create a misallocation of DRA at different segments of the pipeline. Each pipeline segment's flow characteristics will function differently than another segment's, even where the design is to the same codes and specifications, because the pump station placement, pipeline routing, length of the segment, elevation changes, temperature, etc. all lead to different segment characteristics (such as different MADPs and hydraulic capacities). Resolving a system bottleneck at the lowest capacity segment would increase the capacity of the entire system up to the next lowest bottleneck, all else being equal. If a DRA allocation methodology did not recognize these capacity differences between segments, a misallocation of DRA would be expected since costs related to the mitigation of temporary events on higher capacity segments would be categorized as Expansion DRA. This relates to the Commission's findings in Section 4.4.1.

A system-wide threshold, at the non-DRA nominal capacity of the Keystone System, fails to reflect that the system has been expanded through the sustained use of DRA, which is injected at individual piping segments depending on the characteristics of that segment. The Commission considered that many pipeline segments in Canada can achieve the maximum hydraulic flow rate without DRA, absent temporary events. The DRA injected improves the performance at the one pipeline segment the DRA is injected at, and if this one segment is the lowest capacity segment on the pipeline, it would increase the system's capacity to the next lowest capacity segment. When considering a DRA-expanded system, it is not relevant whether or not the event dropped the flow rate below the single system-wide non-DRA nominal capacity. If a segment experiences a temporary event that drops the system's overall flow rate, this still represents a temporary event that requires mitigation and appropriately gives rise to DRA costs that should be included in the Variable Toll pursuant to the Original TSAs.

## 4.6 Frequency of allocation calculation

South Bow proposed that the allocation of DRA be calculated on an hourly basis, whereas Phillips and Cenovus recommended that the calculation be performed monthly. The frequency of analysis also served a different function in each proposal, with the South Bow methodology providing detailed hourly calculations of temporary events, and the Phillips and Cenovus approach aligning DRA allocations with the monthly nomination cycle.

### Views of South Bow

South Bow submitted that the methodology should use hourly calculations because it captures short-term fluctuations in DRA compared to monthly calculations. By using hourly data, it better

aligns with how South Bow operates the system, including how South Bow determines timing and the amount of DRA required to maintain flow rates during restricted and unrestricted operations. This approach also aligns with the principle of cost causation.

Hourly calculations reflect the system's operations, and the time scale that events occur in, which is hours or days. Hourly calculations allow a methodology to capture in-month temporary operating events and short-term fluctuations of DRA. This is inclusive of operating variables (e.g., temperature and viscosity) and provides for accuracy and fairness.

A monthly average minimizes the pressure impact of short-term outages. A monthly average undercalculates the DRA used to mitigate temporary events because averaging events allocates less DRA to the Variable Toll and more to South Bow. The time series for operational hydraulic calculations are not monthly, and the methodology should be as close to real-time as possible, otherwise it creates a loss of resolution that reduces accuracy and fairness with monthly averaging. Using a monthly average MADP to capture the impacts of outages is also invalid because there is no correlation between pump outages and MADP. Most of the pump stations can achieve target flow rate from adjacent pumping stations passing pressure down to them, even if they cannot reach MADP. Using monthly average MADP is not accurate because an average minimizes the impact of the temporary pressure restriction by spreading out the pressure reduction over the entire month.

South Bow criticized Mr. Janzen's model because monthly nominations do not determine if hourly DRA is used to maintain flow rates on the system, either on a sustained or temporary basis. This model also does not allocate Saturation DRA to Mitigation DRA, which is needed to experience the full benefit of the DRA and achieve the calculated drag reduction. To understand when Saturation DRA is used, the analysis needs to be completed on an hourly basis, rather than a monthly basis. If South Bow were to use a hydraulic model for DRA allocations, South Bow would move away from the concept of a non-DRA nominal capacity threshold for the system and look at using a segment-specific non-DRA capacity, remove the assumption of maximum pumping power at each pump station, and change the monthly to hourly. However, even with these changes, South Bow would still have remaining concerns regarding an accurate viscosity profile.

South Bow stated that the Phillips and Cenovus methodology is premised on the concept of a "monthly nominal capacity". However, nominal capacity is defined as the long-term sustainable capacity of the system, which is a much longer time horizon than one month. South Bow uses nominal capacity to determine the contract volumes it can commit to delivering on a firm, reliable basis over terms ranging from 5 to 20 years. Temporary events in any given month have no direct impact on nominal capacity. Should South Bow have a particularly strong month with less down time than anticipated, this does not change the nominal capacity. If DRA is used to mitigate an outage in a month that results in throughputs being higher than it otherwise would be, that short-term use of DRA will not affect the throughput in subsequent months.

As Mr. Janzen agreed during cross-examination, nominal capacity is comprised of two factors: the long-term maximum hydraulic flowrate achievable on the system, and the long-term SOF. South Bow submitted that Mr. Janzen agreed that the mitigation of short-term, temporary

impacts in a given month will not impact either of these components. In South Bow's view, the hydraulics evidence is clear that temporary uses of DRA do not impact nominal capacity.

Further, capping the inclusion of DRA in the Variable Toll based on a "monthly nominal capacity" threshold would require perfect foresight about future system performance. Operators mitigate temporary events even without any knowledge of what might occur later that month. The operator must respond to the conditions of the day, and costs should be allocated based on why that cost was incurred. Allocating costs based solely on hindsight of the system's monthly performance would financially disincentivize South Bow from using DRA to mitigate temporary events unless there was a high degree of certainty that the monthly performance would fall below the "monthly nominal capacity" threshold. This would reduce system reliability, which would not be in South Bow or its customers' best interests.

### *Views of Phillips and Cenovus*

Phillips and Cenovus submitted that a monthly average allocation is appropriate because it is consistent with South Bow's monthly nominations, contracts, planning and scheduling cycle. Nominal capacity is determined over a long period of time that requires consideration of the impacts of temporary events and short-term outages on capacity over the course of a month.

The Phillips and Cenovus proposal calculates, each month, the extent to which any DRA is required to maintain the non-DRA nominal capacity of the system, which would be included in the Variable Toll. For any month where DRA is used to push the system above its non-DRA nominal capacity, that portion of DRA would be treated as Expansion DRA to South Bow's account.

Dr. Arthur submitted that:

- The Commission's Phase 1 Decision creates two categories of DRA usage, one that should be excluded from the Variable Toll: expansion of system nominal capacity; and one that can be included in the Variable Toll: offsetting of system downtime due to planned and unplanned events.

- Unfortunately, the intersection of those two lines does not hit in the same place. And you have a band of DRA usage that is offsetting system downtime, yet resulting in an expansion of system nominal capacity.

- At the heart of any allocation methodology, it needs to resolve that band of inconsistency between the two categories.

- The months that South Bow increases nominal capacity creates the opportunity for incremental revenue for South Bow. It is that incremental revenue that should recover the costs of creating that incremental system nominal capacity.

- If you included the DRA expenses associated with creating that system nominal capacity in the Variable Toll, that will lead to a double recovery of those costs.

In Phillips and Cenovus' view, continuously offsetting normal and expected downtime accounted for by the SOF results in an expansion of nominal capacity. And, since nominal capacity is

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defined by the maximum hydraulic capacity multiplied by the SOF, using DRA to effectively increase the SOF results in an expansion of nominal capacity.

Using the monthly-average achievable flow rate is appropriate because it accounts for the cumulative impact of temporary events. Since the SOF accounts for some system downtime, it is only at the end of the month that you can determine how the monthly throughput was trending relative to the system's non-DRA nominal capacity. Because the non-DRA nominal capacity accounts for the SOF and expected downtime relative to the non-DRA maximum hydraulic flowrate, for a given segment in a given month, there will be temporary operating events that restrict the achievable flowrate, but the cumulative impact of which does not prevent South Bow from achieving throughput equal to its non-DRA nominal capacity of that segment over the course of a month. Allocating DRA on a monthly average basis accounts for this fact.

If South Bow is trying to expand the system's nominal capacity with DRA and mitigates an event, South Bow is likely unable to know if the flow rate would have otherwise dropped below the system's non-DRA nominal capacity, or if it is expanding the system's nominal capacity. For this reason, a monthly look-back incorporating events and downtime over the course of the month is suggested.

Phillips and Cenovus were of the view that the SOF, as the difference between the system's non-DRA hydraulic maximum flowrate and the system's non-DRA nominal capacity, allows for monthly changes in variables such as average temperature and crude viscosity that affect the DRA hydraulic effectiveness curve. In comparison, an hourly calculation ignores average monthly throughput and can improperly classify expansion DRA to the Variable Toll.

Phillips and Cenovus criticized South Bow's proposal that used an hourly pump-by-pump calculation using a maximum hydraulic flow rate as baseline nominal capacity, instead of the proper long term non-DRA hydraulic nominal capacity. Every hourly drop of flow rate below the non-DRA nominal capacity is not a situation that has to be "mitigated" through increased DRA injection because there are also hours where flow rate is expected to exceed non-DRA nominal capacity.

Dr. Arthur submitted that if the classification of DRA usage were being done on an hourly basis without looking at the resulting average monthly achieved flowrate relative to the system's non-DRA nominal capacity, DRA usage would be inappropriately classified as Mitigation DRA. Dr. Arthur provided the following Figure 4 to illustrate the point that by mitigating hourly flow rate decreases below 535,000 bpd with DRA, over the course of a month, the non-DRA nominal capacity has been expanded to 550,200 bpd.

**Figure 4: Monthly average DRA-expanded flow rate exceeds system non-DRA nominal capacity**
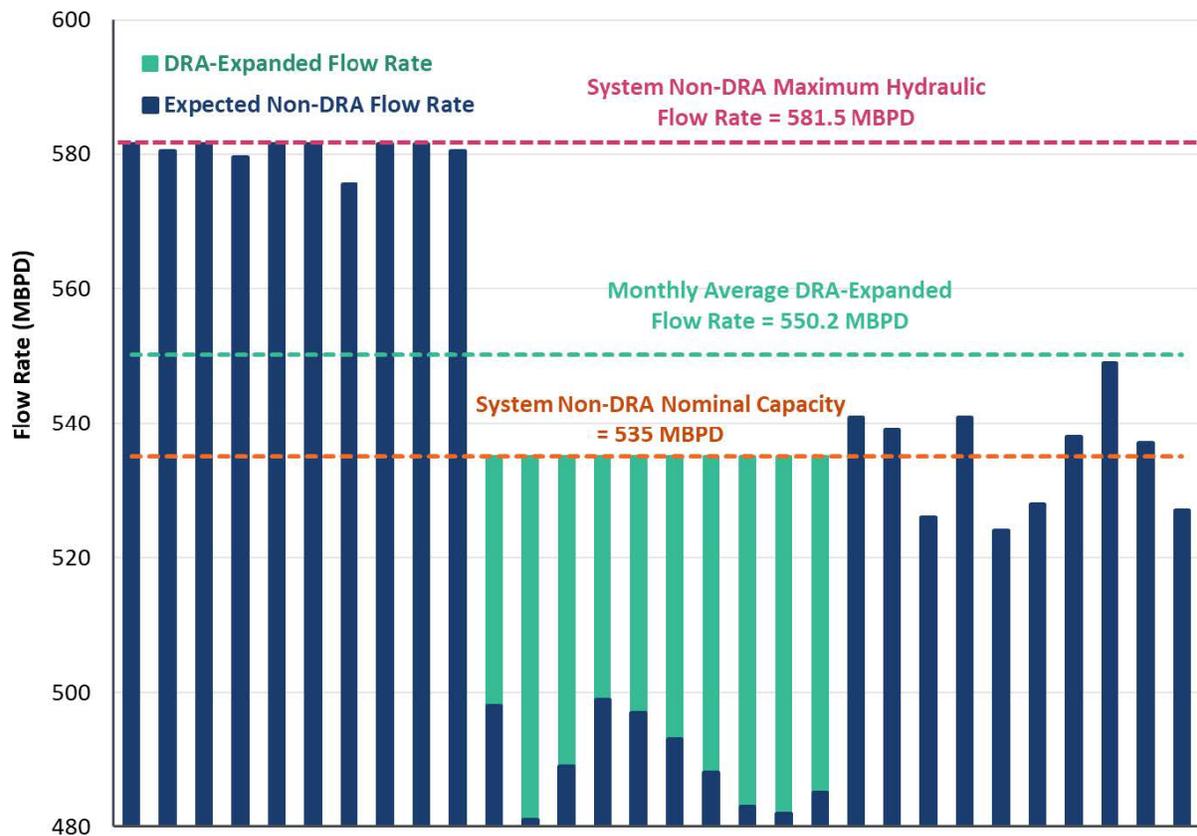


### 4.6.1    Commission analysis and findings

The Commission finds that hourly calculations, as proposed under the South Bow methodology, appropriately align with the Phase 1 Decision and the Original TSAs. The Commission finds that hourly calculations are preferable between the methodologies presented to improve the accuracy of temporary event DRA allocations, and that hourly calculations closely align with real-time operations and the use of DRA during events.

Central to Dr. Arthur and Mr. Janzen's submissions is the concept that short-term temporary uses of DRA that reduce system downtime, over the course of a month, can result in an expansion of nominal capacity. This could present an inconsistency in the two broad categories of DRA use defined in the Phase 1 Decision, and a key question: should certain short-term uses of DRA that mitigate temporary operational events therefore be excluded from the Variable Toll, notwithstanding the Commission's finding in the Phase 1 Decision that those DRA expenses are recoverable in the Variable Toll?

Accordingly, the Commission's examination in the current proceeding required the Commission to refine and consider its findings on the uses of DRA that may be recovered in the Variable Toll

in the context of the parties' intention in the Original TSAs, and with the benefit of a much more detailed record regarding DRA uses. The Commission considered this issue in both the context of the Phase 1 Decision, and the risk allocation agreed to in the Original TSAs. To accept the position of Dr. Arthur and Mr. Janzen, one would need to accept that nominal capacity is in fact being expanded through DRA use that is offsetting temporary events and outages over a month. In this regard, South Bow argued that the hydraulics evidence is clear that temporary uses of DRA do not impact nominal capacity, since nominal capacity involves a much longer time frame than a month, and short-term temporary uses of DRA are not used to provide a sustained and long-term nominal capacity.

In general, the Commission finds that DRA used to mitigate short-term temporary events, over the course of a month, does not immediately result in an expansion of the long-term and sustainable capacity that the Keystone System can achieve (i.e., the nominal capacity). While South Bow may outperform its nominal capacity in any given month, whether due to mitigating operational events with DRA, experiencing less outages or maintenance activities than assumed for in the SOF, or through other measures used within South Bow's reliability program, the Commission does not consider a given month's capacity gains to be an expansion of the system's long-term sustainable capacity, based on the record of this proceeding. However, the Commission is mindful that, over a longer period of time, the consistent and sustained mitigation of temporary events through continual DRA injections that continually pushes throughputs higher could represent an expansion of nominal capacity. The Commission did not conclude that such an expansion has occurred in 2020 or 2021. Moving forward, to the extent that the South Bow methodology, as modified, continues to be used, the Commission requires South Bow to provide information as outlined in Section 4.11.1 to allow parties to monitor and gauge whether an expansion of nominal capacity owing to an increased use of DRA and an effective long-term increase in the SOF is occurring. This information includes the monthly estimated SOF targets used to determine available capacity and the actual realized monthly SOFs.

This type of expansion could be visible through a consistent material increase in the monthly throughput over time or an increase in the SOF assumptions used by South Bow. A material increase in throughput over time means there could be an amount of DRA used for temporary events over consecutive months or years, that could be considered unreasonable to classify as Temporary/Mitigation DRA. Another potential indicator could be an increase in the long-term SOF assumption that South Bow uses in determining nominal capacity, which it uses in turn to determine contract volumes based on its own risk tolerance. South Bow submitted that it increased its long-term SOF to 0.92[24] relating to incremental committed contracts in 2019 and acknowledged that DRA is part of the maintenance and reliability program for operational improvements. South Bow stated there is no evidence that the long-term SOF increase to 0.92 was caused by DRA relative to other operational improvements on the system, which the Commission accepts. Moving forward, South Bow must assess the impact of DRA on any long-term increase to throughput and SOF assumptions, and as necessary, to appropriately allocate sustained uses of DRA to Sustained Operations DRA. These are two examples of

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[24]  From 0.90, which had previously been 0.92.

indicators that can provide visibility for ongoing short-term increases of capacity that could lead to long-term capacity increases, however there may be other appropriate indicators.

Phillips and Cenovus' proposed monthly averaging, combined with their proposed non-DRA nominal capacity threshold, would likely require significant and unusual temporary events to occur over the course of a month before average flow rates would result in allocations of DRA to the Variable Toll. Given the many short-term and temporary events affecting a pipeline, the Commission considers this potential outcome – namely, that monthly averaging regularly excludes DRA expenses from the Variable Toll - to be unreasonable and misaligned with the Original TSAs. The expected impacts can be examined during 2020 and 2021, a time frame that includes the combination of known temporary pressure restrictions and temporary events, primarily during 2020 and extending into 2021. In 2021, the Phillips and Cenovus methodology would result in zero DRA expense allocated to the Variable Toll. However, the risk-sharing defined in the Original TSAs is not expected to absolve any party completely of exposure to appropriate operating costs over the long-term, nor did the Phase 1 Decision indicate this.

The Commission accepts that there are cumulative temporary events factored into the SOF that affect the monthly business and planning cycle, committed contract volumes, available capacity and the target flow rate. There could be a level of temporary events that, when mitigated over the course of a given month, could result in increases in monthly throughputs. However, for the reasons previously stated, the Commission does not consider a single monthly gain in throughput, via an increase in the realized SOF, to represent an expansion of the long-term and sustainable capacity (i.e., nominal capacity) of the system. While hourly allocations are not expected to be flawless, they represent a preferred calculation in the DRA allocation for temporary events when used in combination with the other elements of the proposed South Bow methodology, including with how temporary events are identified with certain safeguards (see Section 4.8).

The Commission accepts that the amount of information and number of automated calculations resulting from hourly calculations within the South Bow methodology could represent a greater challenge to providing transparency to shippers than the monthly model. The Commission heard the concerns around transparency were at least partially addressed in the hearing with South Bow making commitments to attempt to resolve some of the concerns raised by shippers. South Bow must comply with its commitments to improve transparency of the calculations and visibility of the outcome. The Commission is also imposing reporting requirements to provide information sharing that the Commission anticipates will assist shippers to determine in the future if the tolls continue to be just and reasonable (see Section 4.11.1).

## 4.7    Pump station DRA curves

Section 4.1 outlined South Bow's proposed DRA allocation methodology, including Step 1 that categorizes the operating status of the Keystone System as being in either Temporary Operations or Sustained Operations. For periods of Temporary Operations, Step 2 uses Pump Station DRA Curves to quantify the amount of DRA required for Sustained Operations, with the remaining DRA allocated to Temporary Operations. Pump Station DRA Curves identify the hourly DRA expense associated with a given flow rate during periods of Sustained Operations.

The Commission heard submissions regarding the appropriateness of using Pump Station DRA curves in a DRA allocation methodology.

***Views of South Bow***

South Bow submitted that Pump Station DRA Curves are empirical representations of the DRA cost required at a pump station to achieve a given flowrate, absent temporary operating conditions, transient conditions, and outliers. Since South Bow injects DRA for multiple reasons, the Pump Station DRA Curves are required to separate the DRA used for Sustained Operations and Temporary Operations. In total, 19 Pump Station DRA Curves were created with over 330,000 hours of operational data from 2021 and 2022, with each pump station represented by the following equation:

**Figure 5: Pump Station DRA Curves equation**

$$Hourly\ DRA\ Cost = \frac{e^{\left(\frac{Tput - c}{a}\right)}}{b}$$

The exponential shape of the Pump Station DRA Curves is defined by coefficients a and b, whereas coefficient c, shifts the curve along the x-axis. South Bow identified the x-axis intercept when it is hydraulically maximized, which occurs when the pump station discharge pressure is at the MADP, and the downstream suction pressure is at the minimum suction pressure. When generating Pump Station DRA Curves, South Bow stated that 17 of the 19 pump stations lacked sufficient operational data, as South Bow typically injects DRA during Sustained Operations only when a pump station is hydraulically maximized and DRA is required to overcome a drop in pressure. Therefore, some pump stations have limited operational data of DRA injections, and as a result, the curves generated for those pump stations exhibited a roughly linear relationship.

South Bow asserted that factors impacting the exponential shape of the Pump Station DRA Curves (pipeline diameter and roughness) are relatively consistent throughout the Keystone System, and that it is far more important that Pump Station DRA Curves reflect how DRA behaves in the pipeline, rather than relying solely on the statistical significance of the curves. As such, South Bow identified the Pump Station DRA curves on each of the NPS 30 and NPS 34 piping segments with the highest R-squared metric and used coefficients a and b from those pump stations for the remaining pump stations on those piping diameters. For 17 of the Pump Station DRA Curves, the curves therefore maintained a pump station specific x-axis intercept, while standardizing the exponential shape of the curve across pump stations within each of the NPS 30 and NPS 34 pipeline segments.

South Bow included several measures describing the statistical fit of the Pump Station DRA Curves, including the R-squared for the best performing Pump Station DRA Curves on each piping segment (0.234 for the Carman pump station on the NPS 30 segment, and 0.405 for the Portage La Prairie pump station on the NPS 34 segment). South Bow also provided an

aggregated normalized weighted average root mean squared error and mean absolute error for the Pump Station DRA Curves of 25.84 per cent and of 20.07 per cent respectively.[25]

On behalf of South Bow, Concentric Energy Advisors, Inc. provided a further assessment of the statistical validity of the Pump Station DRA Curves. Mr. Moreno submitted that the statistical significance of the Pump Station DRA Curves is useful to evaluate the model, but it should not be interpreted without considering the data or operating conditions of the pipeline. With regards to the R-squared value of Pump Station DRA Curves calculated by South Bow, Mr. Moreno submitted that lower levels of correlation are typical when using disaggregated data (i.e., hourly operational data), and that the statistical significance would automatically increase if more aggregated data was used.

Mr. Moreno analyzed the Portage La Prairie Pump Station DRA Curve, first by applying additional filtering, to create a dataset purely reflective of Sustained Operations DRA, and therefore representative of the two variables of the Pump Station DRA Curves - hourly DRA cost and throughput. Mr. Moreno then created a multivariate regression model that included viscosity, temperature, and hydraulic room, which resulted in an R-squared increase to 0.73.

Mr. Moreno compared his results to South Bow's Portage La Prairie Pump Station DRA Curve, and found an estimated R-squared of 0.91. Mr. Moreno concluded that the enhanced Pump Station DRA Curve he created yielded very similar results to the Pump Station DRA Curves developed by South Bow, and as a result did not recommend any change to how South Bow's created Pump Station DRA Curves. Mr. Moreno further submitted that given the high correlation between the two curves, that he expected the resulting cost allocations to converge over time as more operational data is incorporated in the Pump Station DRA Curves. Ultimately Mr. Moreno concluded that no enhancements to South Bow's methodology were required, stating that "[t]his also means that the enhancements I performed to test the statistical significance do not imply the need to postpone or change the methodology proposed by [South Bow]".[26]

***Views of Phillips and Cenovus***

Phillips and Cenovus stated that South Bow's methodology to allocate DRA costs relies on statistical methods and that the Pump Station DRA Curves do not predict or explain DRA costs as a function of throughput with any reasonable degree of accuracy or reliability. On behalf of Phillips and Cenovus, Dr. Arthur stated that the Pump Station DRA Curves create a loose and indirect association between the actual operating conditions and the amount of DRA allocated to the Variable Toll.

Phillips and Cenovus further criticized the Pump Station DRA Curves stemming from South Bow's approach of standardizing coefficient a and b from the best performing pump stations across the NPS 30 and NPS 34 pipeline segments. As a challenge to South Bow's assertion

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[25] South Bow, Response to CER Information Request No. 1, Filing ID C26130-2 (8 September 2023) at 27-28 [South Bow IR No. 1]. South Bow provides an overview of the statistical measures and the statistical performance of the Pump Station DRA Curves.

[26] South Bow, Concentric Reply Evidence, Filing ID C31804-17 (18 October 2024) at 11-12 (pdf 13-14).

that factors impacting DRA effectiveness are relatively consistent across the Keystone System, Phillips and Cenovus noted that the Portage La Prairie is a unique segment, being the only place where the pipeline transitions from NPS 34 to NPS 30. Phillips and Cenovus further stated the Pump Station DRA Curves that use coefficients from best performing Pump Station DRA Curves, result in curves that at best have the low accuracy of the best performing curves.

Regarding the accuracy of the Pump Station DRA Curves, Phillips and Cenovus also stated that the root mean squared error and mean absolute error metrics provided by South Bow should be assessed individually rather than in aggregate as presented by South Bow. Regarding the root mean squared error of 25.84 per cent and mean absolute error of 20.07 per cent, Phillips and Cenovus submitted that these statistical measures show a best case 20 to 25 per cent margin of error, demonstrating that South Bow's Pump Station DRA Curves are not reasonable or accurate.

When considering margins of error, Phillips and Cenovus stated that South Bow's DRA allocation methodology proposes to allocate 21.2 per cent of the DRA expense to shippers in 2021, noting that the shippers' allocation was within the Pump Station DRA Curves' margin of error. If there is a margin of error within the DRA allocation methodology, Phillips and Cenovus submitted the methodology should err on the side of allocating more DRA cost to South Bow because the need to allocate DRA arose from South Bow having "underbuilt and oversold the System".[27]

In response to the statistical analysis performed by Mr. Moreno, Phillips and Cenovus:

- took objection to the transparency of the additional data filtering;

- stated that Mr. Moreno recommended using a multi-variate regression analysis for generating Pump Station DRA Curves; and

- noted that with Mr. Moreno's enhanced Pump Station DRA Curves, a R-squared value of 0.73 indicated that 27 per cent of the variance of hourly DRA costs are unexplained by the variance in hourly throughput.

***Views of HF Sinclair***

In argument, HF Sinclair referred to the Pump Station DRA Curves as approximated cost curves based on observational data that are statistically biased towards two pump stations. HF Sinclair also noted that operational data from 2022 was used to create the Pump Station DRA Curves, for the allocation of DRA in 2020 and 2021. HF Sinclair submitted that South Bow has developed DRA effectiveness curves that it uses for day-to-day operations in its hydraulic decision-making. However, rather than using those cost curves in its DRA allocation methodology, South Bow proposes to rely on approximated cost curves. Approximated cost curves should not be used given that South Bow has actual hydraulic effectiveness cost curves from the period in question.

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[27]  Phillips & Cenovus, Final Written Argument, Filing ID C32516-2 (27 November 2024) at para 135.

### 4.7.1 Commission analysis and findings

The Commission finds that the Pump Station DRA Curves are an appropriate tool to use to allocate DRA costs. While appropriate, the Pump Station DRA Curves introduce significant complexity into the Variable Toll calculation, given the volume of operational data leveraged, the required data filtering, and the statistical generation of the curves. For the 2020 and 2021 toll years, the Commission is satisfied that South Bow has sufficiently addressed concerns about accuracy and transparency. If South Bow proposes to use the statistical methodology as part of its calculation of the Variable Toll in future years, the Commission expects South Bow to continue to provide information that establishes the accuracy of its calculations and maintains transparency for all parties notwithstanding the complexity of the methodology.

With regards to accuracy, the Commission finds the Pump Station DRA Curves that South Bow's methodology uses to allocate DRA costs in 2020 and 2021 tolls to be acceptable. Mr. Moreno's additional analysis on the Portage La Prairie pump station provided persuasive support that the simplified statistical approach used in South Bow's methodology has a high correlation with a more complex process that yields higher statistical measures of fit. Mr. Moreno stated that in his view, South Bow's methodology was sufficiently accurate, and he did not recommend any changes.

Phillips and Cenovus also raised concerns about the transparency of additional filtering conducted by Mr. Moreno. While the Commission considers Mr. Moreno's description of his additional filtering process to be sufficient to support his analysis and conclusions, the Commission anticipates that the transparency of Pump Station DRA Curves, and their generation, will be an important factor in enabling an enduring methodology. The Commission heard evidence from South Bow that a relatively small portion of its DRA costs rely on being allocated through the layering process underpinned by the Pump Station DRA Curves. Regardless, the Commission is of the view that there is material benefit to improving the performance of the curves over time to more accurately allocate DRA costs between South Bow and its shippers. The Commission addresses how South Bow shares information on Pump Station DRA Curves with shippers in Section 4.11.

Even if Pump Station DRA Curves are improved over time, the predicted DRA cost for a given flow rate (i.e., the value predicted by the Pump Station DRA Curves) will vary from the actual operational data. The Commission accepts that a certain amount of error must be accepted in any DRA allocation methodology, as it is not possible to objectively determine the counterfactual scenario where no DRA was injected by South Bow for Sustained Operations purposes. South Bow's methodology reasonably reduces these errors by using a statistical approach that minimizes the squared errors between the actual data points and the predicted results. With this approach, the errors should be minimized and appropriately occur both to the benefit and detriment of South Bow. The Commission is not persuaded that an appropriate DRA cost allocation methodology should err only in one direction, as suggested by Phillips and Cenovus. In such an approach, the Commission considers it likely that the methodology would have to systematically over-allocate DRA costs to South Bow, to avoid the risk of having the methodology ever err in favour of South Bow.

When considering the margin of error present in South Bow's Pump Station DRA Curves and resulting allocation of DRA expenses, the Commission considered the entirety of South Bow's methodology, including how it identifies Temporary Operations. The thresholds used to identify pressure restrictions and temporary outages, as covered in Section 4.8, provide a margin of error in favour of the shippers which is expected to directionally offset potential errors in the Pump Station DRA Curves.

## 4.8    Identifying outages and pressure restrictions

The DRA cost allocation methodology proposed by South Bow requires classifying DRA use based on whether the Keystone System is operating without restrictions (Sustained Operations), or when it is experiencing pressure restrictions or outages (Temporary Operations). Accordingly, Step 1 of South Bow's methodology provides a framework for the classification and identification of pressure restrictions and outages. Parties debated the appropriateness of how South Bow's proposal identifies such operational events.

*Views of South Bow*

To identify pressure restrictions, South Bow uses data from its SCADA system and an automated process to identify periods where the MADP decreases beyond a one standard deviation threshold. To create the pump station specific MADP thresholds, South Bow used hourly active MADP data from 2019-2021 and then applied a statistical method to generate a distribution of mean values for each pump station's MADP. After confirming the distribution of mean MADP values followed a normal distribution, South Bow set a threshold of a decrease of one standard deviation, whereby an active MADP observation below that threshold would indicate the pump station is experiencing a pressure restriction. Conversely, active MADP observations that are above the threshold indicate that there is not a pressure restriction. South Bow stated that the thresholds ensure that small fluctuations in MADP pressure data do not result in Temporary Operations, and associated DRA costs being allocated to the Variable Toll.

South Bow also uses its SCADA system to identify Temporary Operations caused by planned maintenance and unplanned outages, in conjunction with deviations from typical DRA injections. Temporary Operations are considered to occur if both situations apply:

- A pumping unit presents as "unavailable" in SCADA, and
- DRA injections exceed half a standard deviation above the mean of the distribution of the DRA injections at that unique pump station.

South Bow created a distribution of DRA injections for each pump station, and considers a half standard deviation to represent a significant deviation from typical DRA injections. As with the identification of pressure restrictions, South Bow submitted that using a threshold and conditional logic reduces administrative burden[28] and prevents misclassification of Temporary

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[28]    South Bow contrasted using operational data and conditional logic with manually analyzing SCADA information, controller written logs, equipment reliability reports, outage notifications, and equipment maintenance records.

Operations when pumping units are unavailable without causing operational constraints. In addition, the threshold is a conservative approach to identifying Temporary Operations, and leaves South Bow at risk of paying for DRA used to mitigate minor operational constraints.

The last method used to identify Temporary Operations is for Saturation DRA, which occurs when DRA is injected up to a few hours prior to planned maintenance, pressure restrictions, and power optimization events. Pre-injecting DRA allows time for the DRA to travel the full length of the pipeline segment, and therefore the full effect of the DRA's drag reduction is achieved in time for the event. South Bow submitted that this DRA use is directly associated with mitigating the impacts of events and therefore is recoverable in the Variable Toll based on the Phase 1 Decision and Original TSAs. While South Bow currently manually identifies DRA used for this Saturation DRA, it stated that it intends to automate the process.

On a go-forward basis, South Bow stated it will refine the MADP thresholds to ensure that small pressure decreases do not unnecessarily allocate DRA expenses to Temporary Operations. South Bow additionally stated that other mechanisms could be used to identify the presence of pressure restrictions, such as physical changes within the SCADA system. South Bow stated that it may consider changing how pressure restrictions are identified if other useful data or mechanisms for identifying pressure restrictions became available.

### Views of Phillips and Cenovus

The methodology proposed by Dr. Arthur and Mr. Janzen, on behalf of Phillips and Cenovus, does not rely on identifying periods when the Keystone System is in Sustained Operations and Temporary Operations states. Instead, DRA is allocated to shippers through the Variable Toll only when it is used to provide for capacity up to the non-DRA nominal capacity of 535,000 bpd. As such, the methodology does not need to identify specific pressure restrictions or outages.

With regards to South Bow's methodology, Phillips and Cenovus raised concerns with how South Bow used thresholds to identify Temporary Operations that relied on operational data deviating by either a standard deviation (for pressure restrictions) or a half standard deviation (for planned maintenance and unplanned outages). The presence of an outage does not depend on whether DRA has been injected in response to an outage; Phillips and Cenovus submitted that it either occurred or did not. Similarly for pressure restrictions, South Bow should know when a pressure restriction is occurring and its duration.

Phillips and Cenovus stated that these thresholds could be viewed as proxies to determine whether a particular outage or pressure restriction has a material impact on operations. As such, despite its complexity, South Bow's methodology simply infers whether outages or pressure restrictions occur rather than explicitly determining whether it occurred. Further, it is not possible to determine whether any particular outage or pressure restriction falls within the expected downtime of the SOF.

Phillips and Cenovus questioned the need for the thresholds, submitting that the thresholds would not be required if the Pump Station DRA Curves in South Bow's methodology were accurate. The Pump Station DRA Curves' margin of error leads to a lack of certainty that all

DRA would be allocated to South Bow's account when DRA has not been injected in response to an outage or pressure restriction.

## 4.8.1    Commission analysis and findings

The Commission finds that South Bow's approach to identifying Temporary Operations is reasonable and consistent with the Phase 1 Decision.

South Bow's automated process to identify pressure restrictions, planned maintenance activities and unplanned outages is underpinned by a statistical process. The identification of planned maintenance activities and unplanned outages relies on two key conditions: the status of pumping units tracked in South Bow's SCADA system and deviations in DRA injections from historical operations. The Commission considers this second condition helpful to prevent DRA costs being misallocated to the Variable Toll if unavailable equipment or facilities do not require additional DRA injections. Together, the two conditions reasonably identify planned maintenance and unplanned outages.

The Commission acknowledges the Phillips and Cenovus submission that the threshold deviation for planned maintenance activities and unplanned outages would not be required if the Pump Station DRA Curves were accurate. However, the Commission finds that the thresholds create a buffer that is useful to help avoid misclassifying DRA to the Variable Toll given the dynamic nature of the Keystone System. For pressure restrictions identified by an MADP threshold of one standard deviation, there was no compelling evidence that different thresholds would be more reasonable.

The Commission considered Phillips and Cenovus' criticism that the identification of Temporary Operations resulting from pressure restrictions, planned maintenance activities and unplanned outages relies on the presence of operating conditions consistent with those events, rather than recording when those events occur. The Commission notes that South Bow provided substantial evidence of how appropriate data was used to develop its statistical approach and accepts that the operating conditions reliably signal when the Keystone System has shifted away from Sustained Operations. Leveraging operational data to support a statistical model is also reasonable to ensure that the methodology applied is not overly administratively burdensome and subjective. As such, the Commission finds that South Bow's proposed methodology to identify pressure restrictions, planned maintenance, and unplanned outages strikes an acceptable balance between accuracy, objectiveness, and administrative effort.

The Commission finds that costs related to Saturation DRA are appropriately recovered in the Variable Toll. Saturation DRA is injected with the purpose of having the DRA reach full effectiveness when the operational event occurs. The fact that the DRA is injected prior to an event does not change the purpose for which it was injected. In addition, the Commission did not hear evidence that the use of Saturation DRA was imprudent. Mitigating temporary events can reasonably include actions taken in advance of the planned events that are designed to minimize their impact, and the costs of that mitigation are appropriately considered an OM&A expense and recoverable through the Variable Toll.

## 4.9    Make-up rights

MURs are provisions in the Original TSAs that allow committed shippers to accrue make-up volumes if their full contracted volumes are not used in a month. South Bow proposed to include in the Variable Toll the DRA expense associated with accommodating additional MUR volumes above 6 per cent of nominal capacity, which was opposed by Phillips and Cenovus, and HF Sinclair.

*Views of South Bow*

In Step 3 of its proposed DRA allocation methodology, South Bow proposed to include the DRA expense associated with accommodating additional MUR volumes above 6 per cent of nominal capacity in the Variable Toll. DRA expenses associated with MUR volumes up to 6 per cent of nominal capacity would not be flown through in the Variable Toll. In South Bow's view, this would be fair, equitable and consistent with the cost causation tolling principle.

South Bow has a common-carrier obligation to maintain 6 per cent of the nominal capacity for uncommitted volumes. When this uncommitted volume exceeds 6 per cent of the nominal capacity, this benefit comes at the expense of increased Sustained Operations DRA. If a portion of those volumes are additional MURs, the incremental cost associated will be included in the Variable Toll as the capacity would not otherwise be created or available without the continuous usage of incremental DRA above the sustained requirements. South Bow argued that it has no legal obligation to use DRA to make capacity available for MURs. If these DRA costs are not recoverable in the Variable Toll, South Bow has no business reason to use incremental DRA for this purpose since it would bear the cost and would gain nothing in return.

When committed shippers nominate above their contract volumes, the demand for additional volumes causes the need for incremental DRA. Given that shippers are provided the benefit of additional volumes on the system, beyond the minimum regulatory requirements, it is fair to allocate those costs to them. South Bow noted that if the volumes above the 6 per cent requirement are spot volumes, committed shippers would not be allocated costs. South Bow also noted that MUR volumes are temporary in nature and are not a sustained requirement or demand from shippers. Therefore, the DRA expense should be allocated to the Variable Toll in accordance with the Phase 1 Decision.

*Views of Phillips and Cenovus*

Dr. Arthur submitted that the DRA expense to create expansion nominal capacity that is used to flow incremental committed volumes, uncommitted volumes or MUR volumes should not be included in the Variable Toll. This is because the DRA expense is being incurred to create expansion capacity. Where incremental capacity is created by DRA, MUR volumes have equal priority with uncommitted volumes in capacity allocation, so incremental capacity cannot be exclusively allocated to either MUR or uncommitted volumes.

Phillips and Cenovus argued that South Bow's proposed MUR adjustment will result in expansion-related DRA costs being included in the Variable Toll. Phillips and Cenovus further argued that:

- The Original TSAs do not permit the costs of creating expansion capacity to be recovered in the Variable Toll.

- Committed shippers have already paid the Fixed Toll in respect of MUR volumes at the time the MURs were accrued. South Bow would be double recovering its capacity payment.

- MURs accrue when committed shippers do not nominate their full contract volumes, and in the month that this occurs, there is incrementally more capacity available to transport uncommitted volumes. South Bow can sell that unused capacity to uncommitted shippers, which could result in South Bow being triple compensated.

- Whether incremental uncommitted DRA-expansion capacity is used to transport MUR volumes or non-MUR uncommitted volumes is not a factor in South Bow's decision to create uncommitted DRA-expansion capacity in excess of 6 per cent of the system's design nominal capacity (which is 35,000 bpd).

The DRA expense to expand nominal capacity should not be included in the Variable Toll, regardless of whether it flows incremental uncommitted volumes or MUR volumes. In either case, the cost was incurred to expand nominal capacity, for which South Bow is compensated by the Fixed Toll.

### 4.9.1 Commission analysis and findings

The Commission finds that it is not appropriate to include the DRA expense associated with accommodating additional MUR volumes above 6 per cent of nominal capacity in the Variable Toll, and therefore South Bow must remove Step 3 from its DRA allocation methodology. The Commission is satisfied that - after South Bow removes Step 3 from the DRA allocation methodology and refiles the 2020 and 2021 tolls without the additional MUR allocation - the remainder of the South Bow methodology will yield just and reasonable tolls for 2020 and 2021. The Commission was persuaded that this use of DRA represents expansion use, is not properly classified as an OM&A cost, and therefore cannot be recovered in the Variable Toll pursuant to the Original TSAs. This use of DRA creates additional capacity for the clear purpose of allowing incremental volumes to be transported on the system. This DRA is not used to mitigate temporary operational events, nor used for system reliability purposes.

Consistent with its views in Phase 1, the Commission was not persuaded that the cost causation principle warranted a departure from the Original TSAs, particularly regarding the MUR proposal. The Commission's interpretation of the Original TSAs relating to DRA used for additional MUR volumes was not displaced by consideration to shippers causing, or benefitting from, the cost incurred.

### 4.10 Power optimization

Under the Original TSAs, the cost of power used at pump stations is recovered from shippers through the Variable Toll. During periods of elevated power prices, South Bow uses DRA to reduce the amount of power consumption required at pump stations, to reduce operating

expenses included in the Variable Toll. South Bow refers to this as Power Optimization DRA. While no Power Optimization DRA was included in 2020 or 2021 Variable Tolls, parties conceptually agreed in their respective methodologies to include Power Optimization DRA in the Variable Toll for subsequent toll years.

***Views of South Bow***

South Bow submitted that:

- Power Optimization was piloted in December 2021, with the program commencing in 2022.

- DRA costs used during the pilot were paid for by South Bow, and no DRA used for Power Optimization was included in the Variable Toll for 2020 or 2021.

- The use of DRA during Power Optimization events benefits customers by offsetting high power expenses.

- The incremental expense of DRA is outweighed by the power savings, resulting in an overall reduction in expenses for customers.

- Customers communicated their preference that South Bow use DRA for Power Optimization. Therefore, the program remained in South Bow's methodology.

South Bow submitted that it documents Power Optimization opportunities in detail. This information could be provided to a third-party auditor under the TSA audit rights through a confidentiality agreement, since the Power Optimization process is a proprietary operating state.

***Views of Phillips and Cenovus***

While not an issue for 2020 and 2021 tolls, the proposed methodology presented by Dr. Arthur and Mr. Janzen would have any DRA used for Power Optimization purposes manually separated, documented, and the associated expenses would be recoverable in the Variable Toll. Dr. Arthur and Mr. Janzen raised concerns that South Bow did not include any discussion of how the data it relies on will be recorded or archived such that a third-party can review and verify. Accordingly, South Bow should record:

- its hourly data on prevailing power costs;

- the planned DRA injection amount at pump station prior to injecting additional DRA in order to reduce power costs;

- the flowrate at each pump station, the amount of additional DRA injected each hour to reduce power costs; and

- the quantity of electricity that was actually consumed versus the quantity that would have been consumed absent the injection of DRA.

This data, coupled with South Bow's DRA hydraulic effectiveness curves that it relies on for its operations, would permit a third-party to verify the reasonableness of South Bow's injection of

additional DRA to reduce power costs, and the amount of DRA expenses related to Power Optimization that is reasonable to include in the Variable Toll.

## 4.10.1    Commission analysis and findings

Power Optimization DRA is not an issue for 2020 and 2021 tolls, since the program commenced in 2022. However, based on the record of this proceeding, the Commission finds that, conceptually and as agreed by the parties, Power Optimization DRA would appropriately be classified as an OM&A cost to be recovered in the Variable Toll. This DRA is not used to expand pipeline capacity. Rather, this use of DRA effectively replaces pumping power to provide a net decrease in costs included in the Variable Toll.

The Commission also finds that, to the extent Power Optimization DRA is included in tolls after 2021, South Bow should share sufficient information to demonstrate the use of Power Optimization DRA to achieve net savings in operating costs. South Bow stated that it does document Power Optimization in detail. The data and information identified by Dr. Arthur and Mr. Janzen, summarized above in Section 4.10, to be able to review and verify Power Optimization DRA, appear reasonable to the Commission for South Bow to record. The Commission directs South Bow to discuss with its shippers the data and information that South Bow records as it relates to Power Optimization DRA, to ensure sufficient information will be available to verify the reasonableness of any Power Optimization DRA costs included in the Variable Toll.

## 4.11    Transparency, administrative effort, and an enduring methodology

The Commission heard submissions regarding the transparency of, and administrative effort associated with, both proposed methodologies. Parties also provided submissions regarding whether the proposals could be enduring. While future years' Variable Toll calculations were not before the Commission for decision in this proceeding, the Commission considered all these factors when assessing whether the proposed methodologies yield just and reasonable tolls for 2020 and 2021.

*Views of South Bow*

While highlighting that the disclosure of some information could be detrimental to South Bow's ability to negotiate competitive DRA prices, South Bow stated that during the current proceeding it has been forthcoming in providing all operating data necessary for parties to understand its DRA allocation methodology. It further committed to share similar information with shippers on an ongoing basis if its methodology is approved by the Commission. Per the Original TSAs, shippers have the additional right to conduct one audit for each final Variable Toll. Due to the confidential nature of certain records (e.g., data to verify the Power Optimization program), some information would only be provided on a confidential basis to third-party auditors, retained at the expense of the auditing shipper.

In terms of when information would be provided to shippers, South Bow stated that it is willing to provide information six months after implementing its methodology, and annually thereafter prior to the issuance of final tolls. On an annual basis, South Bow proposed to provide:

- Monthly pump station DRA allocation bar graphs reflecting the DRA allocation from steps 1, 2a and 2b of its proposed DRA allocation methodology.

- Coefficients of each Pump Station DRA Curve equation, provided in a table format, indicating which pump stations have updated coefficients based on the introduction of additional operating data. Additionally, South Bow would provide which DRA effectiveness curves had been updated.

- A table summarizing the annual DRA allocation breakdown by pumpstation.[29]

Along with providing shippers notice of when DRA effectiveness curves had been updated, South Bow stated that it is willing to disclose the DRA effectiveness curves. However, South Bow noted that if not kept confidential, the disclosure of the DRA effectiveness information could reduce its ability to negotiate competitive DRA commodity rates with suppliers.

In addition to its commitment to sharing information for the purpose of transparency, South Bow stated that in some cases it either intends to, or anticipates in the future it may, update portions of its methodology. These updates include changes to:

- Incorporate newly available operational data. South Bow submitted it would update Pump Station DRA Curves on a monthly basis with the most recent operational data. When sufficient operational data becomes available, Pump Station DRA Curves could be updated to use the pump station specific a and b coefficients.

- Improve statistical performance. South Bow identified potential changes to how it could generate Pump Station DRA Curves, including more sophisticated filtering, transformations to account for hydraulic room, segregating Pump Station DRA Curves to smaller time intervals to capture the effects of seasonality that occurs over the course of the year, or additional features when generating Pump Station DRA Curves.

- Reflect that DRA effectiveness may change over time as the composition of oil being transported and the DRA being utilized by South Bow change. On a go-forward basis the DRA effectiveness curves may be updated if testing and analysis show that it is reasonable to do so (i.e., if the accuracy would be improved).

- Update the DRA effectiveness curve and Pump Station DRA Curves if South Bow changed its DRA supplier or changed to a different type of DRA from its current supplier, or its pricing changed.

- Automate the process of identifying when DRA is being used for Saturation DRA, which South Bow currently does manually.

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[29]  South Bow IR No. 1, *supra* note 25.

- Refine the MADP threshold used to identify pressure restrictions to avoid unnecessarily allocating DRA to the Variable Toll due to minor pressure changes. Alternative methods of identifying pressure restrictions would also be considered, should other data or mechanisms become available.

South Bow stated, with one exception, that it was not possible to provide evidence of prejudice that would likely occur if it was required to disclose its DRA unit cost, as it is not possible to provide evidence regarding a possible future event. However, in oral summary argument, counsel for South Bow identified that there could be prejudice between South Bow's DRA supplier and their other customers or potential customers, or for South Bow in future negotiations with its DRA supplier. The prejudice would arise if the DRA supplier was concerned that South Bow's unit price would be disclosed to other parties, and that it could jeopardise South Bow's ability to negotiate favourable pricing terms. The result would be detrimental to both South Bow and shippers, as the higher DRA unit cost would be paid for by both South Bow and shippers.

With regards to its Power Optimization program, South Bow confirmed that it could provide aggregated DRA unit cost information (along with other data) to third-party auditors under a confidentiality agreement. South Bow submitted that the information would allow shippers, through their third-party auditor, to confirm that the Power Optimization program was working correctly.

South Bow asserted that its methodology has low administrative burden and can be an enduring methodology. While South Bow acknowledged that its methodology is complex, it can be automated, and as such has little administrative burden despite running hourly. South Bow noted that an enduring methodology would benefit all parties by avoiding regulatory proceedings and stated that both methodologies proposed in the proceeding could be used on a move-forward basis. However, South Bow asserted that a hydraulic model relies on underlying assumptions that create room for future disagreement between parties.

### *Views of Phillips and Cenovus*

Phillips and Cenovus submitted that while South Bow has automated portions of its methodology, there must be sufficient transparency to allow shippers to audit the results. In addition, the large number of automated calculations in South Bow's methodology would be burdensome for shippers to audit. Phillips and Cenovus also noted that under South Bow's proposed methodology, the Pump Station DRA Curves would continue to change over time, but that it was unclear whether and to what extent South Bow would filter the data (i.e., the process South Bow used, or the process performed by Mr. Moreno). While it is important to consider monthly operating conditions when allocating DRA expenses, Phillips and Cenovus expressed concern that simply adding new operating data to the Pump Station DRA Curves would not accomplish this goal. Rather, the incremental data would be aggregated along with the previous operating data. Phillips and Cenovus further stated that there was no reason that physical system changes on a month-to-month basis would compel adjusting Pump Station DRA Curves on a monthly basis.

Phillips and Cenovus stated that the information required by shippers to determine whether the DRA allocation was reasonable may evolve over time, with their information needs changing through hindsight and experience. To support transparency, Phillips and Cenovus requested the following data be shared to shippers, in addition to the information South Bow committed to share with shippers:

i)    the target flowrate for the month;

ii)   the daily achieved throughput;

iii)  the total daily quantity of DRA commodity consumed by pump station;

iv)  at the time they occur, any updates or revisions to any pump station curves or DRA effectiveness curves;

v)   South Bow's assumed non-DRA nominal capacity estimate vs actual non-DRA nominal capacity for each month;

vi)  South Bow's total DRA usage spit between Expansion and Mitigation, with a breakdown of reasons for the latter (pressure restrictions, maintenance, etc.);

vii) South Bow's monthly average price/DRA volume paid by South Bow;

viii) South Bow's System Operating Factor for each month;

ix)  The DRA hydraulic effectiveness curves South Bow uses in its day to day operations; and

x)   MADP and viscosities (to the extent available) for each pump station.

On behalf of Phillips and Cenovus, Dr. Arthur initially expressed concerns regarding the transparency of South Bow's methodology with regards to third parties being able to audit or verify the reasonableness of South Bow's calculations. He recommended that all necessary information to allow an audit to confirm the accuracy of the DRA allocation be made available to shippers and the Commission.

Phillips and Cenovus submitted that their methodology would not be unduly burdensome for South Bow to implement. In comparison, South Bow's methodology would be burdensome if it had not been automated. Shippers must still be able to audit South Bow's methodology, which would be burdensome to ensure the automation functioned as intended. Phillips and Cenovus did not make any submissions on whether it considered either methodology would be enduring.

*Views of HF Sinclair*

On the topic of transparency, HF Sinclair submitted that South Bow should provide its DRA unit cost information to shippers on a confidential basis. HF Sinclair said that the information would allow shippers to:

- ensure they receive the benefits when actual DRA unit costs are lower than South Bow's approximation;

- judge the reasonableness of the DRA costs included in the Variable Toll;

- audit, on an ongoing basis, whether South Bow should continue to use DRA, or fund new facilities though tolls; and

- file a complaint with the Commission if it appears that South Bow is paying an unreasonable DRA unit cost relative to the DRA market.

HF Sinclair acknowledged that South Bow stated it is unable to provide the DRA unit cost per its contract with the DRA supplier. However, it noted that South Bow has made this claim without providing any evidence to substantiate the claim.

While HF Sinclair stated it supported Phillips and Cenovus's methodology, it made no comment on the administrative burden or enduring nature of either proposed methodology.

### 4.11.1    Commission analysis and findings

A substantial volume of information was shared by South Bow after the initial Compliance Filing. The Commission finds that the additional information eventually filed by South Bow demonstrated that the South Bow methodology, after being modified to remove South Bow's proposed additional MURs adjustment, was sufficiently transparent to support that the 2020 and 2021 tolls would be just and reasonable.

Regardless of whether the modified methodology is proposed for use by South Bow again in future years as part of its Variable Toll calculations, South Bow remains obligated to ensure tolls are just and reasonable at all times and must share sufficient information with shippers on a regular basis to allow shippers to understand and validate the DRA allocations. The Commission weighed potential impediments or risks to South Bow to provide the information, shippers' audit rights under the Original TSAs and the potential for ongoing confidentiality issues, noting the volume of information that was produced by South Bow during this proceeding, either on a public, confidential, or highly confidential basis. The Commission is of the view that there is an interest in transparency that supports ongoing disclosure as discussed below. The Commission expects that South Bow will disclose a level of information beyond what was produced by South Bow prior to and in the early stages of this proceeding.

To the extent the South Bow methodology, as modified, is used for years after 2021, the Commission finds the frequency that South Bow proposed to share information with shippers to be reasonable, which is six months after the issuance of this decision and at least annually thereafter. Neither Phillips, Cenovus nor HF Sinclair took exception to this reporting cycle. The Commission finds that this frequency allows shippers to have a regular view into how the methodology is working and engage with South Bow, if desired, prior to issuing final tolls.

In an IR response, South Bow stated it would provide shippers with pump station DRA allocation bar graphs by month, pump station specific coefficients of the DRA curve equation, an annual summary table of a DRA allocation breakdown by pump station, and the DRA effectiveness curves.[30] The Commission considers this information to be an appropriate starting point to

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[30]   South Bow IR No. 1, *supra* note 25 at 4-5.

ensure there is sufficient transparency if the South Bow methodology, as modified, continues to be used. In response to CER IR No. 1.14 d, Phillips and Cenovus identified additional information that should be provided to shippers, which was reproduced in the above Section 4.11 under the Views of Phillips and Cenovus as items i) to x).[31] South Bow did not oppose that request for additional information. With the exception of items v), vii) and viii), the Commission finds that information to be a reasonable augmentation to the data South Bow stated it would provide. The Commission does not consider item v), which is South Bow's assumed or actual monthly non-DRA nominal capacity, to be a relevant data point to validate South Bow's methodology. South Bow's monthly average unit price for DRA, item vii), was excluded for the reasons discussed below, where the Commission provides its decision on DRA pricing disclosure. Lastly, the Commission excludes South Bow's monthly SOF, item viii), as the Commission has specific SOF requirements in the data it requires South Bow to share with shippers.

The Commission considered what other operational information may be helpful to shippers in assessing the South Bow methodology, as modified. To the extent the methodology continues to be used, the Commission requires South Bow to provide the following information in monthly and annual format to allow all parties to monitor and gauge whether long term DRA use contributes to expanding the nominal capacity through increasing the SOF:

- Monthly estimated SOF targets used for available capacity;

- Monthly available capacity;

- Monthly actual realized SOFs;

- South Bow's assumed nominal capacity;

- South Bow's long-term SOF assumption used for nominal capacity; and

- South Bow's long-term target flow rate used for nominal capacity.

The Commission finds that it is not necessary for South Bow to disclose its DRA unit cost. In determining whether it would require South Bow to disclose its DRA unit pricing, including the monthly average price requested by Phillips and Cenovus, the Commission considered the benefits of increased transparency versus potential harms. In principle, the Commission views that additional information sharing improves transparency, and is therefore generally preferred. However, in this instance, the Commission finds it unnecessary to order this disclosure in addition to the audit rights under the TSAs. The Commission notes that, under the audit rights of the Original TSAs, South Bow will disclose its aggregated DRA unit cost on a confidential basis to a third-party auditor for requests related to verifying the Power Optimization program.

The Commission finds that the disclosure of its DRA unit cost to shippers, even on a confidential basis, may have a potentially prejudicial impact on South Bow's ability to seek favourable pricing in future negotiations, which could increase costs for both South Bow and shippers.

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[31]  Phillips & Cenovus, Response to CER Information Request No. 1, Filing ID C29517-2 (3 May 2024) at 48.

The Commission was not persuaded that the benefit of greater transparency arising from disclosure of DRA unit pricing outweighs the risk for prejudice.

Appendix II provides a summary of South Bow's filing requirements that will be in effect if the South Bow methodology, as modified, continues to be used. The Commission is of the view that the information should be provided to shippers and filed with the CER as an information package. South Bow should also provide this information to support any proposed DRA allocations in Phase 2 of this proceeding. If shippers have requested additional information reporting, South Bow must provide as part of the information package a summary of the request, a summary of any discussion, and the outcome of the request. While some information may be more appropriately shared through audit rights, audit rights should predominantly be used for the provision of detailed data and records.

The Commission considers a high degree of transparency will be needed to ensure that the Variable Toll continues to be calculated appropriately. The allocation of DRA expenses was not specifically addressed in the Original TSAs, but falls within the distribution of risks that parties anticipated when entering into the TSAs. To ensure that South Bow continues to calculate a Variable Toll that is just and reasonable, any proposed changes by South Bow must involve meaningful engagement with shippers, and be communicated in a transparent manner with sufficient information that allows shippers to fully understand the change, with an explanation of how changes impact the resulting DRA allocation. Shippers are not limited only to their audit rights when seeking information to understand the calculation of the Variable Toll. For any change in or to the allocation methodology, South Bow must provide information on the change and a summary of consultation with shippers with its annual toll filings to the CER.

The Commission accepts South Bow's position that its proposed DRA allocation methodology relies on automation and takes minimal administrative effort to run on an hourly basis. This position was not opposed by Phillips and Cenovus, which agreed that the methodology was not burdensome to South Bow. However, Phillips and Cenovus stated that verifying that the automation was working correctly would be a burdensome task. While the Commission acknowledges that verifying the correct operation of any DRA allocation methodology will involve some amount of effort, it was not persuaded that this was sufficient to justify rejecting or modifying South Bow's methodology.

## 4.12    Decision on DRA allocation methodology

### 4.12.1    Commission analysis and findings

The Commission finds that South Bow's proposed DRA allocation methodology, with a modification to remove Step 3 involving the DRA used to transport additional MUR volumes, will result in just and reasonable tolls for 2020 and 2021. As discussed throughout Chapter 4, the Commission finds that this approach more closely allocates costs in a manner consistent with the Phase 1 Decision and the Original TSAs compared to Phillips and Cenovus' proposal.

The Commission accepts that a degree of error is unavoidable in any practical allocation methodology. The Commission did not approach its decision with the goal to ensure that

absolutely no Sustained/Expansion DRA would be allocated to the Variable Toll, nor with the goal to ensure that absolutely no Temporary/Mitigation DRA would be allocated to South Bow. Rather, in making its decision on a DRA allocation methodology, the Commission must determine that the resulting tolls would, overall, be just and reasonable as required by section 230 of the CER Act – which underpins its conclusions regarding the 2020 and 2021 tolls.

As discussed in Section 4.6.1, the Commission considered a potential inconsistency in the two broad categories of DRA use defined in the Phase 1 Decision – namely, that short-term temporary uses of DRA that reduce system downtime may result in an expansion of nominal capacity. In general, the Commission finds that DRA used to mitigate short-term temporary events, over the course of a month, does not immediately result in an expansion of the long-term and sustainable capacity that the Keystone System can achieve (i.e., the nominal capacity). However, the Commission is mindful that, over a longer period of time, the consistent and sustained mitigation of temporary events through continual DRA injections that continually pushes throughputs higher could represent an expansion of nominal capacity.

Nonetheless, as addressed in Section 4.4, the Commission finds that the non-DRA nominal capacity threshold used by Phillips and Cenovus for distinguishing Mitigation DRA from Expansion DRA does not properly allocate DRA costs. This threshold would not recognize that the Keystone System has been expanded through Sustained DRA use,[32] and that there would be DRA costs recoverable in the Variable Toll associated with operating and maintaining the DRA-expanded capacity in response to pressure restrictions, planned maintenance, and unplanned outages. In contrast, South Bow's methodology would allow allocations between both Sustained/Expansion DRA and Temporary/Mitigation DRA categories during temporary events, even during periods that the system is capable of achieving its non-DRA nominal capacity without DRA.

The result of zero DRA expense being allocated to the Variable Toll in 2021 under Phillips and Cenovus' methodology appears unreasonable given the many short-term and temporary events, and associated DRA usage, affecting a pipeline. The Commission also notes that, outside of large operational events as had occurred in 2020, South Bow would be paying a greater proportion of DRA expense as compared to shippers under its proposed methodology.

In reaching its conclusion that South Bow's methodology, as modified, for calculating 2020 and 2021 tolls yields just and reasonable tolls, the Commission gave significant weight to a number of factors discussed throughout Chapter 4 that, together, demonstrate that South Bow's proposed methodology more accurately aligns with the Phase 1 Decision and the terms of the Original TSAs. However, as found in Section 4.9.1, the Commission finds that the DRA expense associated with accommodating additional MUR volumes above 6 per cent of nominal capacity cannot be included in the Variable Toll. This DRA is used for the clear purpose of allowing incremental volumes to be transported on the system and not to mitigate temporary operational events, nor for reliability purposes. As such, the Commission does not consider this specific use of DRA to be an operating cost recoverable in the Variable Toll pursuant to the Original TSAs.

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[32]  South Bow submitted that the DRA-expanded nominal capacity in 2020 and 2021 was 591,000 bpd.

The expert evidence filed on behalf of Phillips and Cenovus, and South Bow, provided a thorough record and aided the Commission's decision on a DRA allocation methodology. The Commission notes that the South Bow methodology, as modified to remove the additional MURs allocation, may continue to be suitable for the calculation of the Variable Toll on a go-forward basis, including for subsequent toll years to be addressed in Phase 2. However, the scope of the current proceeding arose from complaints regarding 2020 and 2021 tolls and the Commission acknowledges that other operational events or circumstances, as well as emerging data could affect the appropriateness of Variable Toll calculations. As such, the Commission has not pre-determined the appropriateness of the DRA allocation methodology beyond 2020 and 2021. To the extent the South Bow methodology, as modified, is used for years after 2021, South Bow has committed to provide significant information to shippers to provide transparency behind its methodology and calculations. Additional information must be provided as outlined in Section 4.11.1.

# 5 Other requests

As part of its Compliance Filing, South Bow included recalculated 2020 and 2021 Final Variable Tolls in which South Bow removed costs as directed in the Phase 1 Order. South Bow requested relief regarding the go-forward interim tolls to be charged and carrying charges to be applied from finalizing the current interim tolls. Phillips and Cenovus opposed the proposal to recover carrying charges associated with finalizing tolls.

***Views of South Bow***

As directed by the Phase 1 Order, South Bow removed from the Variable Tolls certain DRA expenses as per its DRA allocation methodology (discussed in Chapter 4), as well as other costs addressed in the Phase 1 Decision: the capital-related costs associated with pressure control valves and carrying charges associated with maintenance capital that was not treated as a non-routine adjustment.

South Bow submitted that the tolls set out in NEB Tariff No. 34 are currently set as the interim tolls and have been since 1 January 2020. This has imposed a significant financial burden on South Bow, and it would be fair and appropriate to allow South Bow to recover the difference between the interim Variable Toll and the finalized 2020 and 2021 Variable Tolls, including carrying charges.

Per Appendix B.5 of the TSAs, if there is a positive difference between the interim and final Variable Tolls, South Bow is allowed to recover the difference between the interim and final Variable Tolls in one lump sum instalment or in 12 equal instalments in the upcoming year. While the TSAs do not contemplate a multi-year accumulation of deferred OM&A costs, South Bow requested that the carrying charges be commensurate with TransCanada PipeLines Limited's cost of capital for that period. This position is supported by section 232 of the CER Act, which expressly allows the Commission to order interest payable on the difference between interim and final tolls.

As well, South Bow requested that the Commission set the finalized 2021 tolls as the go-forward interim tolls. This would reflect more closely the current OM&A costs on the system, and create less rate shock for shippers when the 2022, 2023 and 2024 tolls are ultimately finalized, and will reduce the true-up and carrying charges required at that time.

***Views of Phillips and Cenovus***

Phillips and Cenovus agreed that South Bow should be entitled to recover the difference between the interim tolls and final tolls for 2020 and 2021. However, South Bow should not be permitted to recover any carrying charges. South Bow has presented no evidence quantifying or justifying any such carrying charges. The Commission should exercise its discretion provided in section 232 of the CER Act to disallow recovery of any carrying charges. This proceeding is a result of South Bow's wrongful attempt to charge shippers for the consequences of its own mistakes. It is fair and reasonable that South Bow bear any carrying charges associated with remedying its non-compliance with the TSAs.

## 5.1    Commission analysis and findings

In Chapter 4, the Commission finds that South Bow's DRA allocation methodology, with a modification to remove Step 3, will result in just and reasonable tolls for 2020 and 2021. As such, the Commission directs South Bow to recalculate and refile 2020 and 2021 tolls using the modified methodology, for Commission approval. As directed in the Phase 1 Order, South Bow removed the capital-related costs associated with pressure control valves and carrying charges associated with maintenance capital that was not treated as a non-routine adjustment. No party opposed South Bow's approach in that regard. The Commission finds South Bow's removal of those costs and charges complies with the Phase 1 Order and Phase 1 Decision.

Since South Bow must recalculate and refile 2020 and 2021 tolls for approval using the South Bow DRA allocation methodology, as required to be modified in this decision, the Commission will decide on the other requests regarding go-forward interim tolls and carrying charges after receiving South Bow's application. To assist South Bow in appropriately advancing its 2020 and 2021 final toll application, the Commission provides the following findings.

The Commission finds South Bow's proposal to set the finalized 2021 tolls as the go-forward interim tolls to be acceptable, pending a decision on Phase 2 of the proceeding. This would be consistent with the previously noted practice to set interim tolls aligned with the most recent regulatory decision on a company's final tolls,[33] and should more closely align the interim tolls with actual OM&A costs on the Keystone System.

Generally, the Commission finds South Bow's proposal to recover carrying charges on the difference between the current interim toll and final 2020 and 2021 tolls to be acceptable. The Commission and NEB have historically allowed pipeline companies to recover carrying costs applied to the difference between interim and final tolls, as allowed under section 232 of the CER Act. Phillips and Cenovus did not persuade the Commission to depart from this practice due to non-compliance with the Original TSAs on the part of South Bow. Carrying charges would be applied to the difference between the interim tolls and properly calculated 2020 and 2021 final tolls – not the originally filed 2020 and 2021 tolls that included DRA expenses and other costs that the Commission found could not be recovered. South Bow must be transparent to shippers on how these charges were determined and applied.

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[33]    See CER, Letter and Order TOI-001-2019, Filing ID C03899-1 (27 December 2019).

# Appendix I – List of issues

The Commission identified but did not limit itself to the following issues for discussion in the proceeding:

1. The appropriateness of the methodology for allocating drag reducing agent costs in the Variable Toll.

2. The appropriateness of South Bow's request to recover the amount by which the finalized 2020 and 2021 tolls exceed the interim tolls charged during those respective years, including carrying charges.

3. The appropriateness of South Bow's request to set the finalized 2021 tolls as the go-forward interim tolls for the Keystone Canada Pipeline System.

# Appendix II – South Bow's filing requirements

As established in Section 4.11, to the extent the South Bow adjusted DRA allocation methodology is used for years after 2021, the below table provides an overview of the information South Bow must include in its information package to shippers, which must also be filed with the CER.

| REGDOCS Link | Required Information |
|---|---|
| South Bow, Response to CER IR No. 1, IR 1.1 d and f, Filing ID C26130-2 | • Pump station DRA allocation bar graphs by month;<br>• Pump station specific coefficients of the DRA curve equation;<br>• Annual summary table of DRA allocation breakdown by pump station; and<br>• DRA effectiveness curves. |
| Phillips and Cenovus, Response to CER IR No. 1, IR No. 1.14 d, Filing ID C29517-2 | • The target flowrate for the month;<br>• The daily achieved throughput;<br>• The total daily quantity of DRA commodity consumed by pump station;<br>• At the time they occur, any updates or revisions to any pump station curves or DRA effectiveness curves;<br>• South Bow's total DRA usage split between Expansion and Mitigation, with a breakdown of reasons for the latter (pressure restrictions, maintenance, etc.);<br>• The DRA hydraulic effectiveness curves South Bow uses in its day to day operations; and<br>• MADP and viscosities (to the extent available) for each pump station. |
| The Commission's additional information sharing (see Section 4.11) | • Monthly estimated SOF targets used for available capacity;<br>• Monthly available capacity;<br>• Monthly actual realized SOFs;<br>• South Bow's assumed nominal capacity;<br>• South Bow's long-term SOF assumption used for nominal capacity; and<br>• South Bow's long-term target flow rate used for nominal capacity. |